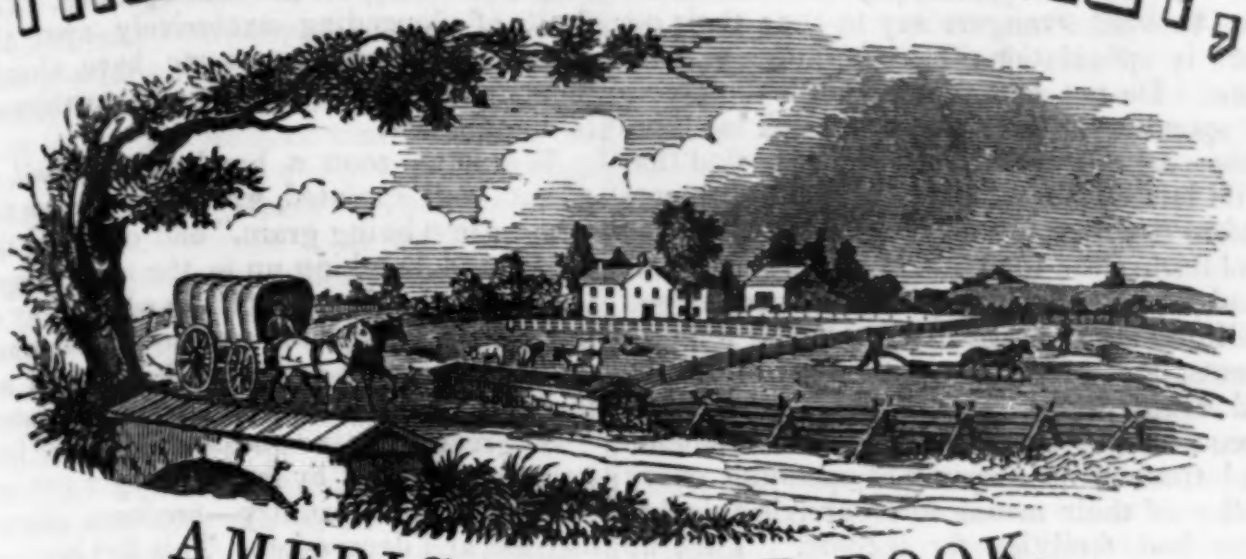
THE FARMERS' CABINET,

AND



AMERICAN HERD-BOOK.

DEVOTED TO

AGRICULTURE, HORTICULTURE, AND RURAL AND DOMESTIC AFFAIRS.

Perfect Agriculture is the true foundation of all trade and industry.—LIEBIG.

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BY JOSIAH TATUM,

EDITOR AND PROPRIETOR,

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For the Farmers' Cabinet.

Settling in New Countries.

MR. EDITOR,—In No. 6, of last volume, I commenced a series of papers adapted to that portion of farmers who were contemplating a home in a new—and to them unexplored—country. Owing to an uncommon epidemic that has prevailed throughout all this region, my labours at the time were interrupted. I now propose, since the arrangements of a benign Providence in the elements of nature, have caused the influences of one season to neutralize the poison of another, to continue my communications.

In commencing with some advice to those about opening new homes, and other fields of labour in a new country, we would say in the first place, do not be too much under the influence of former experience and habits; they should have their influence with you here to be sure, but they should be regulated by circumstances.

Before effecting a permanent location,—before you have squandered all your means, stop and reflect; take a good look around you—do not be in such haste as to fix yourself in a moment, for you have a great deal at stake, and when you are fixed, if you have made a bad bargain, it is not so easy a matter to extricate yourselves.

Now the first and greatest consideration to be kept in view, is to secure a healthy situation, so that yourself and family, and those around you may enjoy health; for health is one of the greatest blessings that Providence has bestowed upon us. Without health, life is scarcely enjoyed. In all new countries, a certain portion, or all, more or less, are subject to extremes of sickness and fatality. Many people, ignorant of the laws that govern human life, have had the hardihood to tell us, there is no difference between a river or a marshy situation, or a high and dry one for living. But we have noticed, from long observation and experience, that the foolhardiness of those people, finds its termination in premature suffering and death. In a word, the sickness of a new country is manufactured by local causes—rotten, decaying vegetable matter, which has been collecting in stagnant pools and marshes for centuries. Avoid all such locations, and flee from them as you would from the hydra headed monster. Do not look so much to the advantages of being near a market, or just such rich black soil, as to sacrifice your health. Secure then, a high and dry situa-

tion, remote from stagnant ponds and marshes. In the next place, pay but little attention to what strangers say to you; their object is speculation; have a mind of your own. Do not be fascinated with the notion of spending all your means in rich land, because it is cheap, for you will soon find that wild land will need extensive improvements before it will bring much money in return; and during the time you are improving your land, and fitting it to yield an income, you will find many necessary wants and requirements, that were never thought of in the old country. We have seen new settlers become hastily entangled in embarrassments and trouble, on account of spending every dollar of their means after arriving, before they had facilities for income. This, no doubt, was brought about by the luxuriant appearance of the country and soil,—these were so flattering, that the mind became absorbed in the contemplation of wealth which never could be realized. Another land mark which should elicit much solicitude to be avoided by the new comer, is those sharks that infest the borders of a new country, and who have learned by necessity and sad experience, to study plans of art to entrap the unwary traveller, in the guise of friendship. We have known many an honest man, who had toiled on with an accumulating family of children, just living from hand to mouth in an old country, and who by dint of industry, had hoarded sufficient to enable them to reach the far West, cheered with the expectation of obtaining a home to make his family comfortable, and crowning his years with happiness, soon stripped of every dollar, by a set of crafty speculators, who always are contriving to lay their bait, by flattering pretensions of friendship and plausible stories. Let the emigrant bear in mind that friendship built upon the calculation of dollars and cents, invariably turns out to be little better than enmity.

After this preliminary advice for the first and opening steps of a new comer, we will proceed to devise what should engage his attention in the way of cultivation and improvement. It has been a general custom from the early settlement of this country, for farmers to depend mainly for their income on raising wheat. The reason of this practice we cannot account for; it however is an error which every resident is aware of. Although the chemical principles of the soil are well adapted by nature for growing wheat, yet it is our opinion, founded on observation and experience, that the climate is too changeable to make wheat the staple crop of dependence. For *nine years* past we have only known three fair yields, or crops, that would pay the farmer for his labours, including all the contingencies. The fault of depending exclusively upon the growth of wheat is, as we have already mentioned, the uncertainty and variableness of the climate.

We have seen a hundred acre field of wheat, well sprouted, grow and survive the winter, in "living grain," and owing to the thaws and breaking up in the spring, together with the frosty nights, and heaving of the ground, during the months of March and April, to become so nearly killed, that not ten acres of the hundred were harvested.

So great a loss as this to farmers of limited means,—and by far the larger part are such in a new country—produces general distress and depression. This fact has been fairly demonstrated the past season. The wheat crop was cut off by rust and blight, so that no more than one-fourth of an average crop has been realized. This, together with the unusual sickness, produces *hard times.*

It has been remarked by some of our agricultural writers, that our farmers can afford to raise wheat for fifty cents per bushel. This is a great error; even if the yield was 20 bushels per acre, it could not be done, for obvious reasons. In the first place, the wheat harvest comes in equally, at once, through every section of country; it must be instantly secured or lost. But few have sufficient help within themselves to secure the amount grown. To hire cannot be done at present, as the country affords but few spare labouring hands that depend on hiring out for employment; the harvest wages are ten shillings per day, which, added to the threshing, cleaning, the cost of seed, and the transportation to market, say fifty miles to each man, taking the country through, the crop would all be consumed in expenses.

We do not intend to condemn the growing of wheat throughout the country entirely, by any means, for it is essentially necessary. The only system of farming that we think can be adopted with safety and prudence, to insure success and a prosperous and onward growth of the country, is the mixed system of farming. Indeed, the only sure way in this country, is for the farmer to raise as much as practicable of every thing within himself; and this constitutes the true mixed system. He should lay out to grow a portion of every kind of grain that can be made use of for his own consumption, which will invariably insure a portion, at least, of that which is most saleable to part with. For instance, if the corn crop should be abundant, and on that account bear too small a price to sell at a profit, he

should be prepared to fatten pork, which may pay well for the consumption and labour. At any rate, by following this plan, he will raise a sufficiency of one or other of the grains, either wheat, buckwheat, rye, barley, corn, or oats, for his own consumption and to part with, of that kind that may be the most saleable, and pay the best profit, to meet all his necessary wants and increase his revenue. Should it be that wheat demands the best price, then he can afford to live on the other grains and part with his wheat, or otherwise, if it should be that oats, corn, rye, &c., command the best price. Another advantage in this system of farming is, that neither of the crops will require to be planted or harvested at the same time; at any rate, they can be so arranged as not to crowd immediately upon one another in harvesting. Again, another great advantage in this kind of farming is obtained in the small, or manageable amount of his crops, so that he will be able to perform all the harvesting within himself, without the expense of hiring labour.

To carry out this system of farming, much attention must be paid to the raising and keeping of good stock of every kind. From the refuse of the crops, the straw, chaff, fodder, &c., can be fed a large number of animals, without any expense, which will almost be an entire gain. To clothe himself and family, the requisite number of sheep should be kept; for the purposes of milk, beef, and farm labour, a certain number of cows and oxen; and while he finds it necessary to appropriate a part for the consumption of his family, his stock is kept up from the progressive increase, and at the same time he is adding to his income, by the sale of butter, hides, tallow, &c.

We are already surprised at the facilities afforded to the farmer in the establishment of woollen manufactories; within a day's ride, the farmer can now take off his wool and exchange it for ready made cloth, at a much fairer advantage than he can manufacture it in his own family.

With a well ordered system of management, our country affords every advantage and encouragement for the prudent and industrious, to become the happy, prosperous, and independent freeman. While we are surrounded with all the blessings that nature can bestow, we cannot but stop and reflect on the suffering and death now witnessed in all Europe, by a large mass of her population. There we find a scarcity of the necessaries of life, of which our luxuriant soil affords an ample supply.

A more befitting season than this, the commencement of a new year, cannot be had, for us, who are comfortably situated at the warm fire-side, in the possession and enjoyment of those blessings, to extend with open arms those aids to suffering millions, that may result in a timely relief.

But humanity compels me to take another view of the evident suffering I see going on among the comfortable and independent farmers I have described. I mean the suffering of his cattle and animals. It is a notorious fact, known through all the West, that farmers that were, previous to coming to this country, kind and attentive to the comfort of their animals, become negligent and indifferent after residing in this country for a length of time. It is almost universally the practice to let neat cattle and sheep stand out, exposed to the blasts of the elements, through the coldest weather we experience. This practice is not only cruel but inhuman, and cannot be too strongly reprobated; for, with a few exceptions, there can be no excuse for it. Every farmer has a sufficiency of straw around him, together with other necessaries for erecting good comfortable sheds, without any other expense than his own labour, which with little repairs will remain good for years. If this practice has become common from the influence of example, which we suppose to be the case, it gives but little credit to him that adopts it, for no prudent man will suffer himself to be influenced by bad example. Every farmer knows, or should know, that it is as much his interest to make his animals comfortable, as it is his duty and pleasure to promote the enjoyment of his own family; for it is upon them that his prosperity and means of living depend. No animal can thrive or keep in good plight, or yield any income, when it is continually pinched and frozen with the cold. It is a common complaint among farmers' wives that they get but little milk at this season of the year. Is the thing to be wondered at, when the cows are exposed to the pelting storms, and covered with sleet and ice, as we frequently see them?

In a future number we shall take up this subject again; in the mean time we hope the reader who may be interested, will reflect on what has already been said.

ANDREW STONE, M. D.

Crown Point, Lake co., Ia.
Jan. 12th, 1847.

A correspondent of the London *Morning Chronicle* recommends Egyptian beans as a nutritious and cheap article of food for the poor. The American beans are equally wholesome, and are free from dirt and weevils; while the Egyptian beans are apt to be foul.

Premium Farm.

We are glad to find our indefatigable friend Jones still in the field. The following letter to the committee on farms of the New Castle Agricultural Society, shows no diminution of energy, or confidence of success.

The report of the committee on crops, gives valuable information.—Ed.

To the Committee on Farms:

Gentlemen,—I again propose for the valuable premium offered by the Society for the best and most economically improved and productive farm, all circumstances and systems considered.

Wheatland is situated mostly in St. George's Hundred, New Castle county, Delaware. It is bounded on the North by the State road, which leads across the peninsula, from Reedy island, head of Delaware bay, to Town point, at the junction of Bohemia and Elk rivers; and on the West by the great Eastern Shore of Maryland road, which runs parallel with, and about 200 yards distant from the State, or what is known as Mason & Dixon's line.

Wheatland, in shape, is nearly a parallelogram; being something over one mile long from East to West, and a little over half a mile in width from North to South. The farm is all arable; not having any wood or other waste land on it. The buildings, which are not very good or convenient, are situated near the road, on the North side of the farm, and in a position about central from East to West. The land is gently sloping to the Southward, and the elevation, near the house, about eighty feet above the tide water. At present, the farm is divided into two grand divisions, by a lane of about one hundred and fifty yards in width, and running from the building upon the North side of the farm to the South, at which point it encloses the head of a branch of the Bohemia river, where there is a constant stream of spring water. This lot is designed to contain about fifteen acres; it is now well set with clover, timothy and orchard grass, and at present constitutes the only pasture for all my stock, except hogs. The stock consists of ten work horses and one colt, a yearling, and seven head of horned cattle, all told, from calves to milch cows, except two small beasts that I design killing off this fall. The two grand divisions of the farm are tilled to an imaginary line at present, running from East to West. The two North fields, or tillages, which are nearest to the buildings contain about eighty acres each. The Southern tillages, which are furthest from the building, about eighty-five acres each. The reason why the fields are smallest near the house, is because my plan is never to haul manures a long distance whilst I have poor land near, and of course the small fields will fare best; the distant tillages, however, will get the best share of lime, clover, and plaster. The fields, or tillages, are now occupied and named as follows:

The North-west field I have called *West*, after that honest man and good farmer, W. West, the first that introduced the use of clover and plaster into Pennsylvania. This field is now sown with wheat, with Pennock's drill, upon one of the very best turned clover lays I ever saw. The field south of, and adjoining West, I have called *Garnett*, after that celebrated agriculturist that never would leave his native State, Virginia, notwithstanding the reported productiveness of the South-western States. This field is now in clover, near forty acres of which was sown after wheat, in 1845: the balance is sown upon oats last spring, the whole of which lies over without being pastured or mown, to be turned under next August for wheat.

Tull is the North-eastern quarter of the farm. About twelve acres of this field was subsoiled last autumn, preparatory to corn this season, after the manner of Jethro Tull, who may be justly styled the father of thorough tillage and drill husbandry. This field is partly—about forty acres—in corn; three acres are in timothy, which yielded a heavy crop the past year, for the tenth successive crop; the residue of the field is well set in young clover, that followed wheat. I am now engaged in cutting off this corn and carrying it in rows thirty yards apart, with the view of sowing wheat between the shocks of corn, to be followed by clover next spring. This plan I consider more profitable and less exhausting than the sowing of oats, formerly the usual course.

Skinner, so named after the oldest editor of our agricultural papers, and advocate of the rights of the tiller of the soil, the fourth tillage, is South of, and adjoining *Tull*, and is designed to contain about eighty-five acres. This field is now well set with clover, that followed the wheat that was taken from it last harvest. According to my system, this field goes in corn next spring. Of the amount and value of the product of the farm the present year, I am not now prepared to form an estimate, as I have not got out my wheat, which is my principal crop. The corn looks well; the oat crop was short; the grass very abundant.

The grounds upon which I claim the premium for the best farm, is from the *system* adopted—the improved and improving state

of the farm, with the economical mode by which it has been raised to its present fertility. That is, from an average of less than five bushels of wheat to the acre ten years ago, or in 1835–6, to an average of twenty bushels, its present annual average, 1846. This increased product has been made by an application of only forty bushels of lime to the acre, and not exceeding two entire crops of clover turned under. You will perceive I have adopted the four-field rotation. Wheat follows clover, corn upon wheat stubble,—no oats after corn,—but wheat sown amongst the standing corn, or otherwise the corn cut, and carried some thirty yards distant from each row, and then plough and sow with wheat. I much prefer this plan, as the wheat is not such an exhausting crop as oats, and besides which, the clover grows much better after wheat than oats. It is upon this tillage, or field of young clover, that I put my manure, which I generally haul out after I have done seeding with wheat, and before the corn is fit to gather. This I try to spread thin and evenly over the young clover; and the next August turn this clover, manure and all, under, as the best possible chance for wheat.

I have stated that I keep no more stock of horses or cattle than what is actually necessary to work the farm and to supply the family with milk and butter. I keep no sheep. This year I have thirteen head of hogs, which I keep up in a large pen; the meat of which I expect will cost me perhaps twice the market price, owing, probably, to the fact of my being too neglectful of them. I have not yet been able to get that breed of *hogs*, the manure from which will pay for their keep!

I have been led to this course—as regards the keeping a small stock of cattle—from the fact of believing that the over stocking the farms on this peninsula has tended much to the exhausting of the soil. I consider the over stocking with horned cattle, sheep, &c., as one of the four principal evils that have operated against this otherwise favoured section of country. The first of which was slavery, which makes the people lazy and careless; second, rum, which led to dissipation, and extravagance, and neglectfulness; third, the horned cattle, which eat off every vestige of vegetation, and left the land exposed to the scorching rays of the summer suns; and in winter they consumed all the straw and fodder of the farm. The fourth and last of these evils, is the want of a judicious government; one that would provide us with a steady home market for the products of our soil and toil; creating consumers to use up the surplus products of our farms.

JOHN JONES.

Exhibition Grove, Stockford,
15th September, 1846.

THE COMMITTEE ON CROPS

Regret that farmers will not more generally report their crops, or compete for the valuable premiums offered by the Society. This apathy may arise, in part, from the fact that but few have, as yet, got out their wheat or oat crops; and also from the fact obtained from the most reliable sources, that the wheat crop is at least 20 per cent. short of the crop of 1845, both in Delaware and on the Eastern Shore of Maryland. Enough, however, is unofficially reported to justify the committee in believing that many crops, both of corn and wheat, have exceeded the standard for premiums, as adopted by this Society.

The Wheat Crop. The Mediterranean variety, as usual, has succeeded best. The late varieties have, in many cases, scarcely produced the amount of seed sown. The Washington and Etrurian varieties have also suffered much from fly, rust and scab.

The Oat Crop is also short of an average crop at least 20 per cent., although appearances, previous to ripening, indicated an abundant crop.

The Corn Crop bids fair to be a full crop in New Castle County, at least. Benjamin Webb has a lot, that, it is supposed by those who have seen it growing, will yield near one hundred bushels to the acre. It was planted on an old timothy and green grass sod, of six years' standing. The particulars of its culture, and amount of product, it is hoped will be furnished before the reports are published.

The Potatoe Crop. The early crop, we are sorry to hear, is affected by the rot, particularly when early dug. The crop is also represented to be short of an average one. It is hoped the late crop may be gathered in a sound state.

The Hay Crop has been abundant. Bryan Jackson reports over three tons to the acre, and is entitled to the premium for the best two acres, clover and timothy grass. The lot upon which it was grown was subsoiled a few years ago, and a heavy growth of sugar beet taken therefrom, after which wheat was sown, followed by grass.

Sugar-beet and Ruta-baga Crop. But few of either of these crops are grown in Delaware. Our farmers and dairymen have discovered that yellow corn meal and good clover hay, cut and mixed together, are preferable on all accounts.

The committee notice with regret, the exceedingly low prices at which our great staples, the wheat, oat, and corn crops, have ranged in the grain market of our Atlantic ports. At Baltimore, wheat has ranged at 50 to 75 cents per bushel, as in quality, during the most of July and August; corn from 40 to 55 cents; and oats from 18 to 23 cents per bushel—the freight, commission, &c., of four or five cents per bushel at the farmer's cost. Grain in the West has also been very low. At St. Louis, for several months, wheat has ranged from 30 to 50 cents; corn from 17 to 20 cents; and oats at about the same price per bushel. And at the town of Davenport, on the Mississippi river, corn would scarcely command 12½ cents per bushel. But within the last few days the price of grain has gone up a little, owing to the reports of the failure of the potatoe crop in Ireland.

John Jones,
Henry du Pont,
Bryan Jackson,
John Smith,
James N. Cleland,
Joseph Carr.

Making of Cheese.

In conversation with one of the largest wholesale cheesemongers and provision dealers in the country, he suggested that there were two great faults of the American cheese, which somewhat prejudiced its sale in the English markets. He is a person in whose character and experience entire confidence may be placed.

He was pleased to say that he had cheeses from the United States as good as any he had ever seen, and that the general character of the article was greatly improved since the first importations.

But the first fault was the softness of the rind. It often cracked, and the cheese became spoiled from that circumstance. This he considered as owing to the cheese being too rich; if so, it is a fault which may be remedied. The English cheeses soon acquire a great firmness. I think proper, however, to add the directions of a most experienced and successful dairy farmer in respect to this matter. He says that the rind may be made of any desired hardness, if the cheese be taken from the press and allowed to remain in brine, so strong that it will take up no more salt, for four or five hours. There must be great care, however, not to keep it too long in the brine.

The second fault is the acridness, or peculiarly smart bitter taste often found in American cheeses. He thought this might be due, in part, to some improper preparation or use of the rennet, and, in part, to some kind of feed which the cows found in the pastures. Both these matters are well worthy of investigation, and that alone can determine.

He was of opinion, likewise, that American cheese would sell better if it were coloured like the English cheese. The market for it was fast becoming most extensive.

In respect to American butter, he considered that which usually came here as a most inferior article. Much of it, I believe, is used in the manufacturing districts, solely for greasing machinery. Salt butter, or butter strongly salted, is not saleable in the English market; and especially the salt must not appear. I cannot doubt however, that presently some of our best June or September butter, put up in lumps, would find a good market here,—if, in truth, we have any to export. The very best fresh butter in London market, however, does not bring so high a price as I have often paid for the best article from the county of Worcester, in Boston market; and I have frequently known the best butter to be sold in Baltimore, and even in Cincinnati market, for half a dollar; a little more than two shillings sterling per pound.

I have seen in England none of the admirable *spring-houses* which are to be found in Pennsylvania.—*Colman's Tour.*

How to Decoy and Destroy Ants in Dwelling Houses. — When practicable, place as near the end or passage on a level, a basin or bowl filled with dry mould; then put a bone or bones of fresh meat in the bottom—such as are discarded from the dining room. You will soon find your tormentors congregate thousands strong; for I assure you they are first-rate bone-polishers. Forty years ago, when a boy, whenever I wanted a particular bone of a duck or goose polished, I always found the ant-hill the best manufactory. Have in readiness a strong solution of boiling salt and water, and when you perceive your enemies begin to retreat, cover them with it. Salt and water cold will destroy them poured into their haunts; but the better way is to decoy them out of their strongholds. It will be good policy to wash out the basin or bowl, and fill it with fresh mould previous to a second decoy, as it will be perceived salt is not a favourite. —*Gardener's Chronicle.*

The imports of tea into the United States from China, during the years 1845 and 1846, were respectively, twenty and a half millions, and eighteen millions of pounds.

The Reading Rail Road.

A BRIEF history and description of this great public work may prove interesting to the citizens of Pennsylvania as well as the public generally, of more distant communities, whose only ideas of the road, are confined to the weekly reports of its immense business.

The rail road was projected in 1833, a charter obtained in 1834, surveys made the same year, and forty-one miles put under contract and construction in 1835.

It was originally designed for its present purpose, an outlet or avenue to market, for the Schuylkill coal region; but its first charter extended only to the Borough of Reading, fifty-nine miles from its terminus on the Delaware river, near Philadelphia; as the right of constructing a rail-road between Reading and Port Clinton, twenty miles, had already been granted another corporation, "The Little Schuylkill Rail-road Company," terminating at the latter point. From insufficient means, this Company was unable to extend their road, and yielded their Right and Charter to the Reading Rail-road Company, which with a further extension of their Charter, beyond Port Clinton to Pottsville, went into an active prosecution of the whole work, from Pottsville to the Delaware, ninety-three miles, under one charter, now known as the Reading Rail-road.

Every Pennsylvanian is familiar with the great embarrassments to the business of the country, checking commercial enterprise, disastrous to every branch of industry, and fatal to public and private credit, during the period from 1838 to 1842. Notwithstanding all these difficulties, the friends of this Road pushed steadily on with its construction, taxing their energies, their means, and their credit to the utmost, to insure its speedy completion; and on the first day of 1842, the first locomotive and train passed over the whole line, between Pottsville and Philadelphia.

From that date to the present, its business, its revenue, and its credit, have increased in a degree scarcely paralleled by any similar improvement, until its tonnage and its receipts are measured, as at present, by millions.

Two continuous tracks of railway extend the whole distance of 93 miles, from Mount Carbon, near Pottsville, to the Delaware river, three miles above the heart of the city of Philadelphia; with a branch also laid with a double track, one and a half miles long, connecting, by the State Road, with the principal business street of the same city, for the passengers, merchandize, and city coal business. The rail used is of the H pattern, with both top edges alike; and weighs 45⅛, 52½, and 60 lbs. to the yard; the lightest having been first, and the heaviest last used. A few tons of other rails, purchased before a further supply of the pattern adopted for the road could be obtained in England, and varying from 51 to 57 lbs. per yard, are also in use.

The track is laid in the most simple manner, the lower web, or base of the rail, being notched into 7 by 8 white oak cross sills, and these laid on broken stone, 14 inches deep and well rammed. This method is found admirably calculated for the enormous tonnage of the road, being rapidly and economically repaired and replaced, securing a thorough drainage, and preserving its line and level true, at all seasons of the year.

The *grades* of this road are the chief elements of its success in revolutionizing public opinion, on the subject of the carriage of heavy burdens by railway. From the most important branch, Coal-feeder of the road, at Schuylkill Haven, to the Falls of Schuylkill, a distance of 84 miles, the grades all desend *in the direction of the loaded trains*, or are *level;* with no more abrupt descent than 19 *feet per mile.* At the Falls, an assistant locomotive engine of great power pushes the train, without the latter stopping, or any delay, up a grade of 42½ feet per mile, for one and four-tenths miles, leaving it on a descending grade, within four miles of Richmond, whither it is readily conveyed by the same engine which started from Pottsville, never leaving her train.

The bridges on this line are of great variety, in plan, and material of construction, stone, iron, and wood. The most perfect and beautiful structure on the road, if not in the State, is a stone bridge over the Schuylkill near Phœnixville, built of cut stone throughout, with four circular arches, of 72 feet span, and 16½ feet rise each, at a cost with ice-breakers, of $47,000. There are 75 other stone bridges and culverts, varying from 6 to 50 feet span; all of circular arcs, spanning water courses, branches of the Schuylkill and roads. There are seven bridges from 25 to 38 feet span each, built of iron, trussed after the "Howe" plan, with wrought iron top, and bottom chords, wrought iron vertical ties, and cast iron diagonal braces. These bridges are stiff and light, and present a very neat and handsome appearance. As, however, the flooring is of wood, and therefore liable to decay and accident, they have only been used where the width and depth rendered stone bridges impracticable; the latter being always used in

replacing wooden structures, wherever it was practicable. There are twenty-two long wooden bridges varying from 41 to 160 feet span, built on various principles, chiefly of lattice work, assisted by heavy arch pieces. Of this latter description, the bridge over the Schuylkill at the Fall, is a fine specimen. It is 636 feet long, consisting of four spans of 134, two of 152, and one of 160 feet above the river. There is one bridge built on Burr's plan, with double arch pieces of 149 feet span; and one on "Howe's" plan, 156 feet span, also assisted by arch pieces. Besides the above, there are twenty-eight wooden bridges of short spans, from 14 to 39 feet, built of King post, Queen post, "Howe's truss," and joists.

There are four tunnels on the road. The longest of these is near Phœnixville, 1934 feet long, cut through solid rock, worked from five shafts and two end breasts; deepest shaft 140 feet; size of tunnels, 19 feet wide, by 17¼ high; total cost, $153,000. Another tunnel at Port Clinton, is 1600 feet long, worked from the two ends only; material, loose and solid rock mixed; 1300 feet are arched; depth below the surface of the ground, 119 feet; total cost, $138,000. The Manayunk tunnel is 960 feet long, through very hard solid rock, worked from two ends; depth below surface 95 feet; total cost, $91,000. Another tunnel under the grade of the Norristown rail-road, and through an embankment of the latter, is 172 feet long, formed of a brick arch, with cut stone facades.

The depots on this road are all substantially built, but with a view to use, rather than ornament. At Schuylkill Haven, three miles from Pottsville, is erected a spacious engine house, round, with a semi-circular dome roof, 120 feet diameter, and 96 feet high; with a 40 feet turning platform in the centre, and tracks radiating therefrom, capable of housing sixteen second class engines and tenders. At Reading are located the most complete, extensive, and efficient workshops and rail-road buildings of every description to be found in the country. The Company's property covers here, besides the rail-road tracks, 36 acres, the greater part of which is already in use for the various operations required to keep this vast machine in life and motion. The main machine shop is 159 by 70 feet, filled with the most valuable tools and machinery, all made, with the exception of three or four lathes, in the Company's workshops, by their own mechanics. Other machine shops, one 87 by 40 feet, are used for fitting iron and brass exclusively.

The iron foundry is 164 by 32 feet, with two cupolas. The largest blacksmith's shop is 121 by 31 feet, 57 smith's fires being in daily use on the works, all blown by fans driven by steam. The main carpenters' shop is 140 by 46 feet, with a pattern shop in the second story.

The iron coal cars, tenders, and smoke pipes are made and repaired in a shop 123 by 83 feet.

A merchandise depot just completed, is 124 by 84 feet, to accommodate that rapidly increasing branch of business. About a mile below the Reading depot, where the rail-road is nearest the river, most efficient water works have been lately constructed, consisting of a reservoir on the Neversink Hill side, 51 feet above the rails, holding 700,000 gallons of water, supplied with a force pump worked by a small steam engine. Attached to this station are also two separate tracks, with coal chutes beneath, 300 and 450 feet long each, for the use of the town; two wood and water stations; a small portable steam engine for sawing wood, a refreshment house, for crews of engines stopping to wood or water; a brass foundry, passenger car house, passenger rooms, offices, &c., &c. All the machinery of the main shops and foundry, is driven by a very handsomely finished stationary engine, with double cranks, of 35 horse power, built entirely on the works.

At Pottstown station, 18 miles below Reading, extensive and efficient shops have also been erected, chiefly for work connected with the bridges and track of the road, and new work of various descriptions. The principal shops here, are 151 by 81, 101 by 41, and 81 by 44 feet. The first shop is covered with a neat and light roof, built of an arched "Howe truss," forming a segment of a circle, 78½ feet span by 16 feet rise.

At Richmond, the lower terminus of the road, at tidewater on the river Delaware, are constructed the most extensive and commodious wharves, in all probability, in the world, for the reception and shipping, not only of the present, but of the future vast coal tonnage of the railway; 49 acres are occupied with the Company's wharves and works, extending along 2,272 feet of river front, and accessible to vessels of 600 or 700 tons. The shipping arrangements consist of seventeen wharves or piers, extending from 342 to 1,132 feet into the river, all built in the most substantial manner, and furnished with shutes at convenient distances, by which the coal flows into the vessel lying alongside, *directly from the opened bottom of the coal car in which it left the mouth of the mine.* As some coal is piled or stacked in winter, or at times when its

shipment is not required, the elevation of the tracks by trestlings, above the solid surface or flooring of the piers, affords sufficient room for stowing 195,000 tons of coal. Capacious docks extend in shore, between each pair of wharves, thus making the whole river front available for shipping purposes; ninety-seven vessels can be loading at the same moment, and few places present busier, or more interesting scenes, than the wharves of the Reading rail-road, at Richmond. A brig of 155 tons, has been loaded with that number of tons of coal in one hundred and thirty minutes, at these wharves.

A very convenient and neat Engine house, has lately been erected at this station; it is of a semi-circular shape, with a forty feet turning platform in the centre, outside; from which tracts radiate into the house, giving a capacity for 20 engines and their tenders of the largest class, the building being 302 feet long on the centre line, by 59 feet wide. It is built in the simple Gothic style, the front supported by cast-iron clustered pillars, from the tops of which spring pointed arches, and the whole capped with turretted capping. Immediately adjoining, are built spacious machine and work shops, for repairs of engines and cars, all under one roof, 221 by 63 feet. A visit to this chief outlet of the Pennsylvania coal trade, will give the best idea of its magnitude, and of the various branches of industry connected with it.

The business of this road requires a large amount of running machinery. The latter consists of seventy-one locomotive engines and tenders, including five in constant use on the lateral rail-roads in the coal region; 3,020 iron and 1,539 wooden coal cars; 482 cars for merchandise and use of road, and seventeen passenger cars.

The engines vary from 8 to 22½ tons weight; two very powerful engines, of 27 tons weight each, are used exclusively on the Fall's grade, before mentioned. The iron cars weigh two and four-tenth tons empty, and carry five tons of coal. The average load of each engine, during the busy months of the year, is about 410 tons of coal, of 2,240 lbs. The cost of hauling coal on this road, is about 35 cents per ton. Freight or merchandise, 75 cents per ton, and passengers 41 cents each, through. Its grades have chiefly secured this great economy in transportation.

The total length of lateral rail-roads connecting with the Reading rail-road, under other charters and corporations, but all contributing to its business, using its cars, and returning them loaded with coal and merchandise, is about ninety-five miles. Some of these rail-roads are constructed in the most substantial manner, with the best superstructure at present used in the country.

By the monthly reports which have been made of the business of the Company, it appears that the receipts from Dec. 1st, 1845, to October 31st, 1846, have been $1,707,312 25. The receipts for the remaining month of the fiscal year, which ended Nov. 30th, 1846, will be sufficient to swell the gross receipts to about $1,900,000.

In the last Annual Report, the managers estimated that the gross receipts would be, for the same period, $1,725,000. From this statement it appears, that unless the expenses vastly exceed the estimate given in the same report, the result of the year's business will prove very gratifying to the stockholders.

Our colliers have now to congratulate themselves on having between their mines and tidewater, two transporting works by land and water, unsurpassed by any other rail-roads or canals in the world. It remains for them by a firm and prudent course to secure to themselves and their customers, the full and free use of both these works, untrammelled by the quarrels or jealousies of either.—*Miners' Journal.*

Good Housewifery.

Our good friend Skinner, of the *Farmers' Library*, often holds a pen that "shys," as we sometimes say of a horse that does not stick to the track. The high blood of the one and the overflowing mind of the other, that is continually impatient for opportunity to vent itself, make them look at every thing on the road, whose shadow they can catch a glimpse of, and hence it is that our friend's descriptions we find not only highly instructive in themselves, but enlivened with *digressions* that seem determined to give one a chance to be wise, whether or not.

In a memorandum of a *breakfast-table conversation* with B. A. Hall, at whose post, in the neighbourhood of Lebanon Springs, our said friend had "hung" up his horse the evening before, and engaged a glass of fresh buttermilk for the morning, we have a variety of items in the farm management of his host, as well as a glance at the thorough inside cleanliness and comfort of his hostess. He breaks away into the following remarks, which we cannot omit to throw before our own readers.

The farm of B. A. Hall, by the way, consists of two hundred acres, one hundred and eighty of which are arable. His staples are butter and pork. Of the latter he sells some fifteen thousand pounds, of the former about four thousand pounds. His average number of cows is twenty-two, and he sends a great number of pigs to the Boston market. He certainly appears to be a very successful farmer; and the great secret of this success is doubtless revealed in the single fact, that

he helps to milk his own cows! But to the remarks we promised, which are taken from the last number of the *Library*.—Ed.

Who can avoid—for the life of us we never could—on entering a dwelling, the true province and dominion of a good huswife, from slyly casting around to see how things look in *her department*—whether the windows are washed, paint scoured, hearth cleanly swept up, cupboard neatly arranged, mantle and chairs and chair-boards dusted, cobwebs not a speck to be seen—all, all "set in order," and neat and clean "as a bandbox?" But, gentle ladies, even all that, let us warn you, does not satisfy the judgment of men who, while they may closely scrutinize your housewifery, entertain, as we profess to do, the highest possible respect for the important, the noble station which Providence has assigned you in the eyes of all men of sense, andwhich honour and duty alike enjoin upon you to *fulfil*, with care and with pride, whatever, whether high or low, may be your rank or fortune; but, if possible, with more obligatory force and necessity in the country than elsewhere.

Too well are all men of observation aware that all is not gold that glitters—the fairest looking apple is sometimes rotten at the core. The hall, the parlour, the show-rooms, and all apartments in common view, may indicate *minute* attention and good taste on the part of the mistress, whose *eye* is best of all brushes; and yet, as it sometimes happens, the chambers of such a house may be the receptacles of filth—the cellars the convenient repository of every offal—the kitchen the scene of waste, and lounge of every idle loafer about the place—the dairy be poisoned with the bad odours of superfluous moisture and half-scoured utensils. We have seen such establishments with disgust; but much more doth it rejoice us to say, that we *have* known and enjoyed establishments (when we had one to enjoy) where "the lady of the house," like the truly brave soldier who, when roused at midnight, springs at once to his arms, ready to do battle—so can such a woman, in proud defiance of the strictest scrutiny, take husband or stranger by the light of the lamp or the light of the sun, by day or by night, from the garret to the cellar—open every closet and every drawer—and demand, "Where do you find, in *my* department, a pin or a feather out of place, a mickle of waste, or a garment without a button?" But, to achieve all this, she should have all *needful* help. Such only is the woman who deserves the name of a good housewife; but he who possesses her possesses a treasure of inestimable value, and bad indeed must be his own management if, with her thrift and her example and encouragement, he fail to thrive. "*She looketh well to the ways of her household*, and eateth not the bread of idleness."

Bone Dust—Super-phosphate of Lime.

It has long been known here, that a dressing of bone dust is considered almost essential in England to make a turnip crop; and that it is also extensively used for other purposes. Here—we mean more particularly in the vicinity of Philadelphia—bones applied as a manure, are but in poor repute. We have heard many farmers say they have used them without any beneficial effects whatever. In some parts of Delaware and Maryland however, they are used to good purpose. Why should there be this difference in their effects in different locations? While we are seeking them out of the country, why should the English farmer be seeking for them three thousand miles distant? Doubtless it must be owing to the difference in climate—in soil, and in the mode of application. In England, the climate is very much more moist than ours, and therefore more favourable to their use. In our high dry soils, where there is a scarcity of acids, the bones in their natural state, can not be expected to act favorably, inasmuch as they are very insoluble—or in the language of Spooner in his Prize Essay—extremely indigestible. Now it seems to us, that an exceedingly interesting and valuable hint, of altogether a practical character in relation to this matter, may be gathered from the following remarks, taken from the last number of *Coleman's Tour*.

Let us avail ourselves of every means to retain on our soil, the thousands of tons which we have long been in the practice of exporting, to add to the annual fertility of England's fields. Let us rather make the article available for ourselves, and export the eatable material.—Ed.

Bones, broken and ground, have been a long time employed as manure in England, and with wonderful efficacy. Indeed, the extraordinary improvements in some parts of the country have been wholly ascribed to the application of bones. It was found, likewise, contrary to all expectations, that bones which had been through the hands of the soap-boiler, and from which all the animal and gelatinous matter had been thus abstracted, and that even bones which had been calcined, were of equal efficacy with those which were applied in a green state, and fully charged with animal matter. It was also ascertained that bones applied as a manure, beyond a certain point, were not efficacious in proportion to the quantity applied; and that sixty bushels of bones to an acre, produced no more beneficial effect than sixteen or twenty. Here experience and inquiry were confounded, and here science came triumphantly to their aid.

Upon examination, it was ascertained that what gave the efficacy to bones was the phosphorus contained in them, connected with an acid. It was not ascertained that the animal portion of the bones was of no importance; but it was slower in its effects, in ameliorating the soil, than the inorganic portion of the bones; and that what was mainly important, in the application of bones, was to supply this inorganic portion in a form that it should speedily be taken up. In an ordinary state, this phosphorus was combined with lime, in such proportions that it was not easily dissolved: but, Professor Liebig, to whom agricultural science is so greatly indebted, discovered that, by the application of sulphuric acid to the bones, a portion of this lime would be abstracted, and go into another form; and a salt would be left containing a much larger proportion of phosphorus,—and so called the *super-phosphate of lime*,—which was soluble in water, and would be at once taken up by the plant.

"Phosphate of lime is a substance very difficult of solution: and thus, in a very dry season, the effects of bones are slight and imperfect. Super-phosphate of lime, on the other hand, is extremely soluble, so much so that the vitriolized bones can be entirely dissolved or suspended in water, and thus applied. This at once explains the cause of the valuable properties of the preparation. The bones in their natural state are extremely indigestible; the acid cooks them—converts them into a species of soup, which can readily be eaten and digested by the young turnips. The adamantine fetters, with which the various elements composing bones are bound so compactly together, are by means of this new agent burst asunder—the compact is broken, and each constituent element is left to pursue its own course, and exercise its own natural affinities."*

The effects of this preparation of the bones has answered every expectation; and where before sixteen and twenty bushels of bones were applied to an acre, in the growth particularly of turnips, four bushels, prepared with sulphuric acid, are found now to be even more effectual. The advantages of such a preparation are very great,—first, in stimulating and forwarding the growth of the plant; next, in the cheapness of the application; and next, in its so forcing the plant, as soon to place it beyond the reach of the fly, which never attacks it after the third leaf is formed.

*Spooner's Prize Essay. Journal of the Royal Agricultural Society, vol. vii. p. 1.

The best mode of preparing the manure has been matter of various experiments, and deserves inquiry from the acrid nature of the acid employed—the oil of vitriol. Mr. Pusey advises, to erect a heap of fine mould, and, forming a basin or crater in the centre, to place the amount of bones to be dissolved in it, and to apply gradually an amount of sulphuric acid equal to half the weight of the bones, which, after a short time, will completely dissolve them; and then, shovelling and mixing the mould together, the manure will all be in a condition to be distributed by a machine in the drills prepared for sowing the turnip seed.

Mr. Tennant, of Shields, one of the best farmers in Scotland, puts twenty-five bushels of bones into three old iron boilers, and next pours in two bottles of acid, containing one hundred and seventy pounds each, and adds eighteen gallons of water to each boiler. In a day or two they empty the contents of the boilers into two cart-loads of light mould, with which it is thoroughly intermixed; and, being turned over three or four times, after seven or eight weeks the compost becomes dry and mealy, and can be spread by the hand.

Mr. Spooner advises to place the bones in a hogshead, and pour the acid upon them at the rate of one third of the weight of the bones in acid, that is, to one hundred and eighty pounds of bones sixty pounds of acid; and, after it becomes sufficiently dissolved, to mix it with ashes, and apply it in that form. He recommends, likewise, that, first of all, the acid should be mixed with one fourth of its weight of water, or perhaps half as much water as acid, which will raise it to the temperature of 300° Fahr., and will much assist the dissolving process. Too much care cannot be taken to guard against the effects of the acid upon the clothes or skin of the operator.

The beneficial effects of this application are now beyond question. Mr. Spooner cites a case in which two bushels of vitriolized bones, with ashes, gave as good a crop as sixty bushels of bones unprepared. To Swede turnips it seems more congenial and efficient than to white turnips. Where the crop of turnips is of so much importance as here, this discovery is of immense consequence. Whether it will be equally beneficial to other crops,—to wheat or grain crops,—is to be decided by further trials. The experiments reported by one farmer, in reference to a crop of carrots the second year after its application, and to a field sown with barley one year after its application, showed most decidedly, so far, its permanent beneficial influence.

For the Farmers' Cabinet.

Improvement in Axles.

I have believed that an advantage would result from calling the attention of your numerous readers, to an improvement in AXLES, which has recently been invented, and which in my humble opinion, is likely to form a new era in wagon, and carriage making. The inventor, Isaac Slack, of Avondale, Chester county, Pa., has secured the invention by letters patent; and although from the very liberal views of some, we might infer that they would disapprove this course,—yet the decided advantages likely to result from the improvement, and the circumstances under which the discovery was made, render in the view of his friends, an ample apology for this course.

I will here briefly refer the reader to some of the advantages claimed by the inventor for this construction. And although there is here and there a chance individual, who, from prejudice, or from other motives, very difficult to appreciate, will strenuously oppose the introduction of this improvement —yet I firmly believe, that every man who has fairly examined it, is in candour compelled to yield the validity of these pretensions.

1st. The friction is much lessened. The axles revolve with the wheels; each wheel having its separate axle or spindle extending to the centre of the machine; thus the leverage of the spindles is equal to half the length of the *ordinary* axle, or about two and a half feet, instead of six to twelve inches, as is generally the case. So that by this contrivance, the *bind*, or *friction* on the spindles, occasioned by sideling ground, or side motion, is diminished to less than one sixth part of that exerted in the common hub.

2nd. The noise and waste of oil, occasioned by the *play* of wheels hung by the usual method, is entirely avoided; for by this improvement, they may at all times be kept free, yet so tight as to make no noise in running.

3rd. All dust or sand is effectually excluded from the boxes.

4th. A wagon constructed on this plan, may be oiled at any time, whether loaded or empty, by the simple process of pouring it in from a can.

5th. The oil having no access to the out end of the hub, a disagreeable collection of grease and dirt is avoided, and a neat and graceful finish introduced in its stead.

6th. The hub is of cast iron, and subject to no friction, and is therefore almost imperishable. The mortices may be made larger and the spokes driven tighter, than can be done in wooden ones; and the tenons of the spokes are effectually protected from the oil; thus making a stronger, and much more lasting wheel.

These are undoubted advantages, which combine in this new construction, to form a *compact*, *simple*, *neat*, and *durable* machine. I will here add for the satisfaction of any reader feeling an interest in this matter, that several carriages and wagons of different weights, are in use, and being made by the inventor in his vicinity; and a reference to which will I trust satisfy any one that the above is in no wise too highly wrought.

A FRIEND TO IMPROVEMENT.

Chester co., Pa., Feb. 4, 1847.

HINTS TO FARMERS.—The farmer's life is shunned by many because it seems one of mindless drudgery. It ought not so to be. If our farmers would study and reflect more, they might do less hard labour, and yet accomplish more in the course of a year. Ten hours' work in summer, and eight in winter, ought, with good management, to give any man a good living. He who works so hard that he cannot read or reflect after the labours of the day are over, because of fatigue, does not plan wisely. Let no man shun work when work is to be done; delve, delve, forever, is not the end of man's life. The farmer's evenings should be devoted to mental acquirement and rational enjoyment. To sup and tumble into bed is a hog's fashion, and highly injurious to health. But let a farmer have about him the choicest works of his own auxiliary avocations; let these form the subject of study and conversations at least two evenings in a week, while the newspaper, the newest and oldest volume, each have their allotted seasons. Two or three dollars, contributed by each family in a neighbourhood or district, would go a great way in the purchase of standard books at modern prices. These are but hints which each reader will modify as his judgment shall suggest. I plead only for the essential thing of making home pleasant, and its hours of relaxation, hours of instruction also. H. GREELY.

PLANT TREES.—Plant trees every where, we say: let them shade our streets, and grow wherever there is room for them. Especially plant them in the country, where open fields will admit, and be sure that in the end they will surprise the planter by their growth whilst he and his children are sleeping! In evidence of this, let us quote an anecdote to the purpose. It is related of a farmer in Long Island, that he planted an

ordinary field of fourteen acres, with suckers from the locust (a native of this country) in the year of his marriage, as a portion for his children. His eldest son married at twenty-two. On this occasion the farmer cut about fifteen hundred dollars worth of timber out of his locust wood, which he gave to his son to buy a settlement in Lancaster county. Three years after he did as much for his daughter. And thus he provided for his whole family; the wood in the mean time repairing by suckers all the losses it suffered.—*Boston Transcript.*

For the Farmers' Cabinet.

Surplus of Salem County.

The following statement compiled by Robert G. Johnson of Salem, for the Historical Society of New Jersey, showing the large amount of surplus produce obtained from the soil of Salem County, during the year 1845, over and above the amount consumed, I extract from the National Standard of Salem. The extent of the County is only three hundred square miles, and the number of inhabitants 16,024 in 1840; since that time there has probably been some increase.

Exports of Salem County for the year 1845:—

Wheat,	68,919 bush.	90 cts.		$62,027.10
Corn,	386,254 "	50 "		193,127.00
Oats,	174,574 "	31½ "		54,117.94
Buckwh't,	6,000 "	60 "		3,600.00
Rye,	2,322 "	60 "		1,392.00
Amount,	638,069			$314,264.04
Hay, straw and brooms,				28,400.00
Meat of various kinds,				83,325.00
Grass seeds,				17,500.00
Truck and fruit of all kinds,				67,975.00
				$511,464.04
Ship timber and productions of the forest, more than				200,000.00
Total exports,				$711,464.04

The corn crop of the year 1846 has been perhaps the heaviest ever grown in Salem County, and the oat crop much heavier than in 1845. The surplus for the year 1846 will probably reach near a million of dollars, and the productions are rapidly on the increase.

D. P.

Salem, N. J.

We have long known Salem County, as among the most prolific in New Jersey. With abundance of tide meadow; a soil easy of tillage and naturally good, the farmers have made large quantities of manure, which has brought up their lands to a high state of productiveness. The facility of obtaining lime, and the free use of extensive marl beds, have also been seized upon and improved till the surplus of her soil amounts as we see above, to nearly four dollars per acre: or, deducting the amount of timber, to something less than three dollars. The aggregate spared from this small County, seems large, especially to us who know that no inconsiderable portion of it is still unimproved by tillage: but we believe that Salem County need not, and that she will not, stop short and be satisfied with this aggregate:—let her double it,—and when that is done, she may shake herself to further exertion, and double it again.—Ed.

For the Farmers' Cabinet.

Mildew.

The following opinions on mildew, gathered from various sources, and modified by my own observations, I offer for publication. Mildew is a parasitic fungus growing upon the culms, sheaths and leaves of grasses, particularly wheat. Plants of the large sub-class *fungi*, are many of them very minute, and vary so much from other plants in their growth and fructification, that some persons doubt their organization as vegetable bodies: and the mildew or fungus, growing on wheat, being one of the minute fungi, not capable of being examined well, except under a high magnifying power, it is by many believed to be an exudation of the sap from the stalk, arising from disease.

The office of plants of this class, seems to be to hasten the destruction of vegetable matter; for from the time that the energies of vegetable life decline, until the body has been nearly reduced into its elements, some of the many species of fungi, are engaged in the work of destruction, if in situations favourable for their growth and production; but when the principle of life in vegetables, is vigorous and healthy, the fungi seldom succeed in obtaining a place upon them. That plants of this class will grow, and that they can be cultivated and propagated, if not by true seed, yet by their sporules, or by parts of their substance, may be shown by the culture of the common edible mushroom, *Agaricus Campestris*, a fungus of sufficient size for examination—this mushroom is raised by the gardeners for market, with about as much certainty as other vegetables, by introducing the spawn or gills of this species of mushroom into a bed of earth and manure properly prepared; for a description of the process, see M'Mahon's Gardening,*—"Kitchen Garden in October." Another instance may be made the subject of experiment. The mouldiness sometimes found on bread, is a fungus; take two pieces of bread not sufficiently baked, put one of

*See also Farmers' Cabinet, vol. 10, page 29.

them in a clean cupboard, in which there is no mouldiness, in the summer season—and put the other at the same time in a similar place, but near or in connection with a piece of mouldy bread; it will be found that the mouldiness will be sooner and more abundantly communicated to the latter. That both will become mouldy at length is true, because in the season that this fungus will grow, its sporules will be conveyed by the atmosphere in small quantity, but the mouldiness will be completed much sooner when the sporules are furnished at first in quantity.

In plants that flower once, bear seed, and die, including annual and biennial plants, of which wheat is one, the vital energy begins to decrease shortly after the formation of the seeds and before its ripening; the absorbents of the root cease to draw any support from the earth; the lower part of the culm or straw, becomes ripe, rigid and sapless, whilst the upper part remains of a green colour, and full of juices, which pass gradually from below upward, into the ears or seeds; the straw gradually ripening upward, as the sap in the straw goes, (probably by capillary attraction) to perfect the grain.

The mildew is frequently found upon wheat before, or at the time of flowering, when the stalk and sheath being in a vigorous growing state, do not suffer from it, and it obtains no hold upon them; but the leaves having fulfilled their purpose, are weak and become mildewed; the only damage is, that the sporules are remaining on the dead leaves in such quantity as greatly to peril the crop, if circumstances favourable to their growth should take place, when the straw becemes weakened before ripening, and I very much doubt whether in any case, a field becomes entirely discoloured with mildew in half a day as sometimes happens, except the leaves and sheaths, had been mildewed previously.

The particular fungus called mildew in England, has been figured and illustrated by Joseph Banks, President of the Royal Society, by coloured plates much magnified, showing its growth, form, action and developement, and exhibiting the insertion of its root-like appendages among the vessels of the culm—this work, an octavo of a few pages, I have not seen for years; and it is probably scarce. It is in the Philadelphia Library, No. 3759.

I do not remember the name given by Banks to the species described, but I believe we have two species known as rust or mildew. I have not examined them for some years, having given up microscopical examinations, except in cases of great necessity. I find in Eaton's manual of Botany, two species marked as rust; viz. *Puccinia graminis* and *Uredo linearis*.

For the production of mildew on wheat, it is necessary—1. That the growth of the wheat through age, poverty, or disease, be weak and not vigorous.—2. That the sporule or seed of the mildew be present.—3. That from rain, or heavy dew, so much moisture be present as will enable the sporule to adhere to the culm.—4. That the heat be sufficient for its growth. When all these circumstances are present, the growth of the mildew on the straw is rapid, as the colour of the straw is changed in a short time—but several hours elapse before the root-like processes of the mildew, inserted between the plates and tubes of the culm, are so large as to compress the vessels of the culm and prevent the ascent of the sap. As an evidence of this, it will be found possible to clean the straw by rubbing or washing. But after a short time the root-like processes, force themselves through the plates and tubes of the straw, preventing any movement of the sap. The stalk retains its green colour, and does not ripen—the grain receives no further addition from the sap—the soft part evaporates and shrivels—and the injury seems to be nearly irreparable. The only mode of relief that I have heard proposed, is to cut the grain immediately when dry, bind it up, put it in close shocks, and let it stand till dry. I have tried this twice, and can only draw upon my memory for the result, once with partial success, and once without any: the weather succeeding being not entirely dry. I still believe, that if the straw and grain were clear of any wet except the sap, and the process of cutting and shocking carefully done, and the weather should remain dry for a week, that the wheat would ripen, and it is well established, that no advantage is obtained by letting it stand uncut after being mildewed. We can easily conceive, that if the mildew is a fungus of the nature of a mushroom, the close compression in the sheaf and the exclusion of light and air, may destroy it; and when that is done, the compression on the culm may cease, and the attraction of the sap to the head be resumed. It is now known that Indian corn cut before it is entirely ripe, and put in shocks, continues to ripen for a considerable time.

The poisonous nature of many species of fungi—their action on the salivary glands, and the suddenness of their appearance, lead me to suspect that the slavering of horses

at pasture, in some seasons, is owing to this or some other species of fungus on the grass.

A belief has long existed in this country, and in most countries of Europe, that wheat growing near to a barberry bush—*Barberis Vulgaris*—is liable to blight or mildew, and I have for years suspected, that a fungus usually found on the barberry, appearing like a black speck on the smallest branches, is the same that is found on the wheat. It would give me much pleasure if some person fond of microscopical observations, would examine it, and prove the truth or falsity of my suspicion.

If the foregoing views are correct, the means of preventing mildew upon wheat, so far as it can be prevented, will be those that shall cause a healthful and vigorous growth, of which suitable and sufficient manures, draining and culture, are the most effective—and no land should be sown without such culture and manure—for if a part of the crop should become so weak as to be mildewed early—then the sporules or seeds thence derived, are always ready to be placed in destructive activity, when the other circumstances are favourable thereto.

ALAN W. CORSON.

Montgomery co., Pa.,

For the Farmers' Cabinet.

Large Hogs of the Chester Co. breed.

TO THE EDITOR,—In a letter received from my friend John Worth, Jr., of Chester County, he gives the following account of the weight of four hogs recently slaughtered, raised and fed by Moses S. Carpenter, a neighbour of his:—

The largest barrow,		653½ lbs.
" second	"	647½
" third	"	523½
" fourth (a sow)		465½
	Total,	2290 lbs.

They wanted six days of being twenty-one months old. The sow has had two litters of pigs—the last of which were weaned only twenty-four days before she was slaughtered. Mr. Worth was not present at the time of weighing them, but supposes it to have been done correctly. He adds that he had estimated their weight at 2300 lbs.

Respectfully, &c., AARON CLEMENT.

Philadelphia. Jan. 28th, 1847.

The above were certainly four noble grunters, and had reason to be proud of themselves. Even in a p[illegible] of sixty hogs lately killed by Isaac Woolston, the steward of the Burlington County Poorhouse, in New Jersey, they would have made themselves conspicuous. These sixty, as we learn from the *Mount Holly Mirror*, weighed 24,131 lbs., making an average of 402 lbs. The largest weighed 542,—the smallest 304 lbs.—ED.

For the Farmers' Cabinet.

Observations on the Potatoe Disease.

MR. EDITOR,—I have already given you some of the results of my observations on the potatoe disease. I will now give you others.

You are aware that there are those who hold, that the potatoe disease is caused by the hot weather. I will make an effort to show what influence the heat has upon the disease, and thus add another proof of the truth of my theory. I noticed, this season, after the disease had well commenced, when we had a few very hot days, that the disease progressed much faster, and threatened to destroy every potatoe in this neighbourhood that was exposed to it; but after a few days the weather became cooler, and being somewhat dry, the disease was checked, and a portion of the crop was saved. Now there must be a cause for this, and I will attempt to show that cause.

In order that decay should progress, it is necessary that a certain quantity of heat and moisture should be present. The more of these, the more rapid will be the decay. The products of this decay are carbonic acid, &c. When the weather was very hot, there was sufficient moisture in the ground and in the air for the purposes of decay. During the night the moisture in the air would be precipitated in large quantities upon the plants, and in the morning there would be a heavy dew. These circumstances, then, being highly favourable for rapid decay, all those plants which had already seeded, (and there were a host of them,) and had commenced decaying, now rotted very fast, and filled the air with carbonic acid gas. This supply so vitiated the air, and rendered it so unwholesome, that a large portion of our population became afflicted with fever and ague, bilious fever, intermittent fever, and other diseases, so much as to check, in a great degree, the business operations of the community. Many kinds of plants, also, suffered severely, but particularly the potatoes—they rotted very fast. Shortly after the weather became cooler—a portion of the carbonic acid became absorbed by the forest trees and other living plants, and the conditions essential for decay not being present in so large quantities, the decay progressed more slowly, making the supply of carbonic acid not so great. The beneficial effect was almost immediately felt by the potatoes—they suf-

fered less, and the drought continuing, and the weather remaining cool, the disease was almost entirely stopped. Nor was the beneficial influence of the cool air and drought felt alone by the vegetable creation. Our population became healthier, and we now hear of comparatively few cases of desease. And what remains of the fruit and other crops have ripened finely and been gathered in good order. CHEMICO.

Wilkesbarre, Oct. 22, 1846.

Alderney Cows.

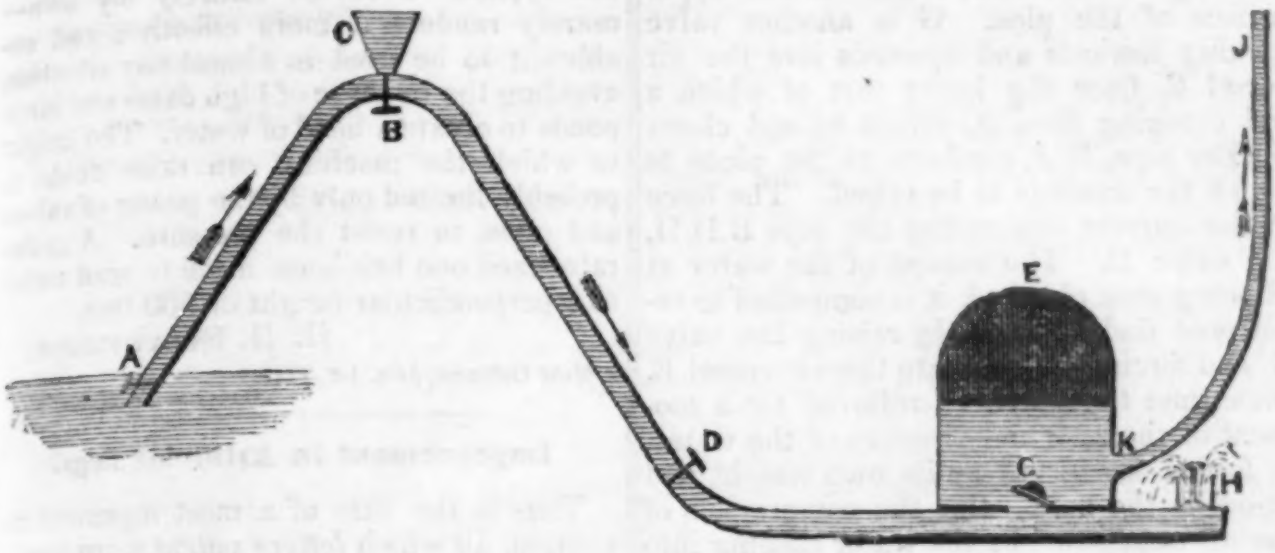
SOME gentlemen have not thought the Alderney cow handsome; but in truth, she is the *handsomest of cows for the dairy*, although she may not fill the eye like a thorough-bred Durham, in good condition, so much esteemed by every experienced dairyman; yet there are thousands of families who want one or two cows, rich in milk and butter, mild, gentle, and intelligent, on excellent terms with the milk-maid, and the Alderney, of all others, is *the cow*. She is well adapted for the lady of a snug rural mansion, and all dairymen would find it to their interest to keep two pure Alderneys to every twelve cows, the advantages of which are well understood in some parts of Scotland, and perhaps a dairy of twenty well-chosen animals of this breed would compete with any twenty cows in the United States, when butter of superior quality fetches a good price. In short, the finest specimen of an Alderney is a true emblem of a milch cow, and any person keeping this breed merely for the dairy, who once gets one, feeds and treats her properly, will never be without one.

A good Alderney cow in Jersey, is expected to yield 7 lbs. of butter a week, and many have been known to produce double that quantity for a short period. Some give from 16 to 18 quarts of milk per day, during the months of May and June; and I was told of numerous instances of cows which yielded from 10 to 14 lbs. of butter each, in a week. Major Barns, the Governor, informed me that he had a cow which gave 25 quarts of milk a day; but ordinary cows did not average more than 10 quarts a day, yielding 7 lbs. of butter, each, in a week. It was stated, that, in summer, 9 or 10 quarts of milk would produce a pound of butter, and, in winter, when the cows are parsnip-fed, the same quantity of butter may be obtained from 7 quarts. The general average yield of each cow, old and young, is rather more than 365 lbs. of butter in a year, or about 8 quarts of milk per day.

The cows there, are universally tethered, and are moved, watered, and milked, three times a day. They are fed principally on lucern or clover, but the quality of their butter is never considered so good, when thus fed as when they range on a natural pasture.

The mllk, when strained stands at about 10 inches deep in the vessel, till the cream has all risen, which usually occupies three days in summer; and in winter, in order to hasten its rising, the vessels are covered and placed on the hearth at bed-time. Consequently, skimming is never performed but once, and then not before the milk has become coagulated or turned sour. In the operation of skimming, the cream is first detached from the edge of the vessel all round, and then is raised up together, as much as possible, and by inclining the whole mass over the vessel intended to receive the cream, the latter will sometimes slip off at once from the coagulated milk. At the bottom of the vessel there is a small hole stopped with a peg, which is occasionally withdrawn, in order to drain off the serous or watery portion of the milk, and thereby separate it from the cream.—*American Agriculturalist.*

LABOR.—It is labor which *puts the greatest value upon land*, without which it would scarcely be worth any thing; it is to that we owe the greatest part of all its useful products: for allow the straw, bran bread, of that acre of wheat is more worth than the product of an acre of as good land, which lies waste, is all the effect of labor; for it is not barely the ploughman's pains, the reaper's and thresher's toil, and the baker's labor, that is to be counted into the *bread* we eat; the labor of those who broke the oxen, who digged and wrought the iron and stones, who felled and framed the timber employed about the plough, mill, even, or any other utensils, which are a vast number, requisite to this corn, from its being seed to be sown, to its being made bread, must all be *charged on* the account of *labor*, and received as an effect of that; nature and the earth furnished only the almost worthless materials, as in themselves. It would be a strange *catalogue of things, that industry provided and made use of, about every loaf of bread*, before it came to our use, if we could trace them; iron, wood, leather, bark, timber, stone, bricks, coals, lime, cloth, dyeing drugs, pitch, tar, masts, ropes, and all the materials made use of in the ship, that brought any of the commodities made use of by any of the workmen to any part of the work; all which it would be almost impossible, at least too long, to reckon up.—LOCKE.



For the Farmers' Cabinet.

Machine for Raising Water.

I AM pleased to find by the frequent notice taken of Montgolfier's Hydraulic Ram, in the agricultural newspapers and magazines of the North, that this simple, effective, and inexpensive machine, is likely to be hereafter more generally used for the purpose of raising water. It is a matter of surprise that so beautiful a contrivance should have become so obsolete and neglected, as to be scarcely known except to the scientific.

A few years ago, before these machines had come into use in the United States, I caused one to be constructed near Covington, La. The fall of water requisite to work it being very small, I continued to increase it by the improvement which I am about to describe.

A B D is a leaden pipe, bent into the form of a syphon and carried over the bough of a tree, the short leg A B resting in the pond or spring that feeds the machine, and the longer leg B D, conducting to and terminating in the machine itself, which is placed a few inches lower. C is a funnel communicating with the interior of the syphon through an air-tight three-way cock B, of the same calibre as the syphon itself. At A, under water, and at D, a few inches lower down than the end of the pipe at A, are stop-cocks, also of the same diameter as the interior of the pipe.

The cocks A and D being closed, the cock at B is opened, so that water poured into the funnel C, will fill both legs of the syphon. This being completely filled, the cock B is turned so as to cut off all communication with the funnel, leaving the syphon still open. The cocks at A and D are then opened simultaneously, when the water of the spring immediately begins to enter the short leg of the syphon and descend the leg B D, in a continual stream, with a force amply sufficient to set the machine in operation.

In this manner, by employing a syphon instead of a straight pipe, conducting from the pond or spring to the ram, a fall of six or twelve inches, which would not afford sufficient power to work the ram, may be increased in power so as to equal that of a natural fall of many feet. A fall of one foot or more may be obtained in any situation, by partly *burying* the ram, so as to place it lower than the feeding reservoir; and the escape of the waste water will not impede the working of the valves, for I have made it work at a depth of two feet under water, by simply lightening the escape-valve at H, of a part of its weight. A fall of five or six feet, is amply sufficient for all ordinary purposes. The power will, of course, be in proportion to the perpendicular height of the syphon; which cannot, however, be made to act, if its elevation exceeds thirty-two feet. This will give a power of 14 pounds to the square inch, if merely the dead pressure be taken into consideration, but a much greater power if the momentum of the descending column of water be calculated. The forcing power of the air vessel, like the power of a Bramah press, will increase in proportion to the enlargement of its horizontal area. An air vessel twelve inches square, with a head of 32 feet, would exert a power on the water within it greatly exceeding 2000 pounds.

For the information of those unacquainted with the machine, it may here be well to sketch briefly its operation. Suppose B D H to be a pipe leading from an elevated spring to lower ground, and closed at the lowest end. H is a valve of leather, metal, wood, or caoutchouc, opening inwards and downwards, loaded with a small weight, and

covering, when closed, a hole in the upper surface of the pipe. G is another valve opening inwards and upwards into the air vessel E, from the lower part of which a and escaping from it, drives up and closes smaller pipe, K J, conducts to the place to which the water is to be raised. The force of the current descending the pipe B D H, the valve H. The escape of the water at H being thus checked, it is compelled to recoil and find an issue by raising the valve G, and forcing its way into the air vessel E. Meantime the valve H, relieved for a moment of the rush and pressure of the water, is forced downward by its own weight and re-opens the hole. But the compression of the air occasioned by the water rushing into the vessel E, quickly shuts down the valve G, and forces a portion of the water in the vessel up the pipe K J, the only escape that it can have. The water rushing down from B, is thus driven again to seek egress at the valve H, until that valve is forced up by the current and closes the aperture, when the water again recoils and enters the air vessel through G; and is once more, when G is shut down by the compression of the air, driven to escape at H, which has re-opened by its own weight, while a part of the water left in the air vessel is forced by the expansion of the air up the pipe K J, in a continual stream to its destination. This process continues until accident or wear stops the working of the valves. The valves make from 25 to 80 regular and measured strokes per minute, and are set in motion by pressing down the valve at H.

My first machine was made entirely of wood, including the air vessel, and worked well. But when the syphon was applied and the descending current set the valves in motion, so great was the power obtained that the machine burst with an explosion like that of a swivel. The perpendicular height of the syphon when this experiment was tried, might have been about 10 or 12 feet. Another put together more strongly, with cross-bolts and rivets of iron, withstood the pressure, although the water was forced through the pores of the wood and stood like dew on the outside.

I believe that Hydraulic Rams are now manufactured of cast iron by —— Reeves, who had seen my wooden machine at work in 1843 or '44, and afterwards took out a patent. He has the credit, and I hope, the profit, of first introducing it into *general* use.

This invention dates from 1796, and is due to one of the brothers Montgolfier, who invented the air balloon. My adaptation of the syphon—a device entirely my own—merely renders it more effective, and enables it to be used in almost any situation, avoiding the expense of high dams and large ponds to create a head of water. The height to which the machine can raise fluids, is probably limited only by the power of valves and pipes to resist the pressure. A moderate sized one has been made to send water to a perpendicular height of 300 feet.

H. H. Strawbridge.

New Orleans, Jan. 1st, 1847.

Improvement in Artificial Legs.

This is the title of a most ingenious invention, for which *letters patent* were granted to Benjamin F. Palmer, of Meredith, New Hampshire, November 4th, 1846. Mr. Palmer's Artificial Leg cannot be spoken of in terms of too high praise, it has received the unqualified admiration of gentlemen of the medical profession, and of every skilful machinist who has examined it, for the simplicity of its construction, and the perfection of its movements. The inventor having had the misfortune to lose one of his legs,—amputated above the knee—made use of various artificial substitutes therefor, and finding how very imperfect they were—the joints clumsy in their articulation—inclined to creak and get rickety—presenting an unnatural and unseemly contour, as they were operated, with gaps and rough edges for the destruction of the clothing encasing them: he resolved on trying to invent something better and more perfect.

His mechanical ingenuity, aided by experimental tests, produced the artificial leg and foot for which he has obtained a patent. To give an idea of its perfection, I would remark that Mr. Palmer visited Washington during the sitting of the great "National Fair," last spring, wearing one of his own artificial legs; and that no one had the least suspicion of his being supported and walking on other than natural and handsomely proportioned limbs: the articulation of the joints was so perfect, and he managed his artificial limb with such freedom, that only a slight limp could be detected in his gait. The joints preserve a smooth and natural contour in all positions—not straining or injuring a silk stocking at the toe or ankle joints; they make no noise in their movements, and can be used for years without requiring repair. A foot and leg, to be applied above the knee, is composed of only seven parts: it will therefore be perceived that its mechanical construction is remarkably simple.—*Eureka.*

Address

Of Hon. Morris Longstreth, before the Jeffersonville Agricultural Association, of Montgomery county, Pa.

In rising to address the "Jeffersonville Agricultural Association," you will allow me to express my hearty congratulations, that you have at length followed the example of the intelligent of other States and countries, by making an united effort in the great cause of agricultural improvement.

"*In union there is strength;*" and this axiom is especially applicable to the tillers of the soil, who, from the nature of their employment, must habitually live and labour, in a measure isolated—and therefore eminently feel the necessity of stated meetings, to discuss matters appertaining to this greatest of all temporal interests.

In thus associating, you have not only consulted your true advantage, but you have also followed the instinct of the age, in concentrating the light of many intellects on a given point; and for the benefit of others, it may be suggested that your deliberations in future should be recorded, and transmitted for publication to some agricultural journal. In this facility of preserving facts by printing, lies our greatest advantage over past generations, and the germ of improvement in all time to come; for no hand can write, no tongue can tell, what sublime discoveries in the science of agriculture, may have perished with the myriads who have gone before us, from the period when the command went forth, "In the sweat of thy face, shalt thou eat bread." For in the midst of his toils, the agriculturist may derive new vigor to his nerve and new strength to his arm, from the reflection, that his occupation, blended with that of the herdsman, has been especially appointed to man, as the condition of his existence, by the fiat of his Creator.

Labour, moreover, has been blessed by Heaven; and the enjoyment of Paradise itself, without the occupation of the faculties bestowed upon him, was totally incompatible with the happiness of man. This is proven by the fact, that when he was created and placed in the garden of Eden, he was not to eat the fruits of idleness, but he was enjoined "to dress it and to keep it." It is therefore an ordinary error to imagine that the necessity of labour involves also an onerous burden;—whereas, all whose fate it is to have no occupation, are among the most miserable of mankind. Idleness on the one hand, and excessive labour on the other, constitute the extremes, and which is the greater evil of the two, is a problem very difficult of solution. The happy medium is moderate labour and an adequate reward; and this condition, which incidentally includes sufficient leisure for the cultivation of the social relations, literary pursuits, and political duties, is attained in this commonwealth, as perfectly as under any system of government with which we are acquainted, ancient or modern.

Labour, being of divine institution, and necessary to the well-being of man, is therefore honourable; and as nations emerge from barbarism to the light of civilization, this truth is fully recognized. And while we accord to the manufacturer, the mechanic, and the miner, the reward due to their useful pursuits, it will not be forgotten, that to the tiller of the soil they owe the very staff of life, and that his vocation lies at the root of human existence.

Pre-eminently honourable, therefore, because pre-eminently useful, is the life of the honest farmer; and if he ever should be tempted to repine at his lot, and covet the luxuries of city life, let him beware of the thorn that lies concealed under the gaudy exterior of fashion; and of the vices that lurk in the precincts and purlieus of our cities. Of the vicissitudes of mercantile affairs, I can speak with the advantage of much personal experience in earlier life; and may safely say of my own knowledge, that of every ten individuals who devote themselves to commerce, under the credit system, not more than one is eventually successful. Let him remember, on the other hand, that in the refined, but highly artificial state of society in our cities, our most eminent citizens propose to themselves, as the appropriate reward for editorial, legal and medical ability, artistic merit, and mercantile success, an evening of existence, devoted to the innocent, natural and pure enjoyment of life in the country.

Cato says,—and we can have no higher Pagan authority,—"That the country man has fewer bad thoughts, and as his property binds him to the state, not so much as a pledge, but by the stronger and better ties of feeling; so it is natural that a labour wholesome to the body, whose powers it keeps in exercise; and not performed in gloomy dwellings, but in the unrestricted life of nature, in the sunshine and the storm, should preserve the mind in perfect soundness, and thereby cherish a sobriety and acuteness of observation, a calm and unbiassed judgment. The free country man, who cultivates and reaps his own field, enjoys in the progress of the seasons, and the nature of his employments, an ever-varying and liberal relaxation, without which it is

almost impossible that soul and body can be maintained in unbroken soundness."

In the present enlightened state of the public mind, it is requisite that we cultivate the intellect as well as the soil; and restore to our profession a shadow of its ancient dignity; when prophets, poets, and statesmen, gloried in an art which has been trampled upon and despised, only in ages of ignorance and barbarism. There is in fact no better standard, by which to measure the intelligence of a people, than to observe the estimate which is placed on agricultural pursuits. Illustrations from classical literature, as well as sacred history, crowd upon us at this juncture. All the polished heathen nations of antiquity placed agriculture under the special superintendence of some favourite deity.

The Isis of the Egyptians, and the Ceres and Proserpine of the Greeks and Romans, presided over every production of the husbandman: and the beautiful allegory of the retirement of Proserpine to the shades of Pluto, for half the year, typified the dormant condition of nature in winter, and her return, its brilliant revival in spring. Abraham, David and Elisha, the latter of whom was found ploughing in his field, with a yoke of oxen, are sufficient examples of the practice of the Hebrews. Hesiod, the contemporary of Homer, wrote in its praise, and Xenophon, one of the great names of antiquity, not only was a farmer, but the author of a beautiful account of rural life 2,200 years ago. The Romans practised the arts of tillage, with a zeal only secondary to their military pursuits, as the example of Cincinnatus, and the writings of Cato, Columella, and Virgil, sufficiently attest. There cannot be a better illustration of the honour attached by the Persians to the art of agriculture, than the account given of the interview between the younger Cyrus and the Greek General, Lysander, who being led by Cyrus through his grounds: "All these," said the Persian, "I have myself planned, and even planted many of the trees with my own hands;" and when the Spartan General replied, by an incredulous glance at his splendid robes and chains, and armlets of gold, he sware to him by Mithras as a good servant of Ormuzd, that he never tasted food till he had fatigued himself by labour.

Tradition has rescued from oblivion and transmitted to us, the rudiments of almost all we yet know and practice, notwithstanding much that must have been lost. The remains of ancient sculpture and pictures, also help to enlighten us, and it is interesting to view the first rude attempts in forming the hoe, spade, reaping hook, and plough. The plough, especially, exhibits every grade of improvement, from the wooden beam, with a hard knot for a coulter, down to the efficient and scientific implement manufactured in this village by your friend and neighbour, Seth I. Roberts.

The tyro in agriculture may also be surprised and enlightened by the discovery, from the few agricultural works that have come down to us, that nearly all our ordinary manures were well known to the ancients. This is sufficiently exemplified by a description of a Roman manure heap that would do no discredit to our own times: "Almost every material capable of decomposition, which modern science or experience has suggested, animal, vegetable, or mineral, was carried to the manure heap. Their manure yards were slightly hollowed and paved at the bottom." They were also favourable to ploughing under green crops; drill husbandry was in full operation, and threshing machines were invented more than two thousand years ago. Though we do not find any direct mention of plaster, yet the use of lime was common in various nations. Thus it will be seen, notwithstanding our astonishing strides in other branches of knowledge, which consists, however, chiefly in the combination and application of well known principles,—yet that in the science of agriculture, we are still in our infancy.

We are indebted for much that has been handed down, to the monasteries of the middle ages; whose sacred character preserved them from the violence of the feudal Barons, in whose libraries were sheltered the ancient books, and on whose lands were carried on almost all the agricultural operations that could be safely practised.

In one important branch of our profession we are indeed far inferior to the Egyptians and Assyrians, and that is "irrigation." It is true, in this region, favoured by the late and early rains, we are not under the absolute necessity of following this system, though we know its benefits, from the high value of our watered meadows. In Egypt, there are yet rude attempts made to follow in the ancient track, by pumping the waters of the Nile into reservoirs and canals. But the system of artificial irrigation, was perhaps best understood in Mesopotamia, the land first inhabited by man; a region famous for its early civilization and fertility. That country, lying between the Tygris and Euphrates, and which must have been the granary for the stupendous cities of Babylon and Nineveh, is now almost a desert, and its teeming population replaced by tribes of wandering Arabs. The happy situation of

this region, and the circumstance of the bed of the Euphrates lying on a higher level than that of the Tygris, enabled the wise Chaldeans to open a perfect net-work of sluices and canals from the former river, which after irrigating the country, were absorbed by the soil, or discharged into the Tygris.

Even the use of the artificial grasses, which is sometimes claimed as a modern improvement, was familiar to the ancient farmers of Italy and the provinces, as we are informed by Gibbon; particularly the Lucerne, which derived its name and origin from Media. Other descriptions of clover were no doubt introduced with the alternate system of husbandry, which must have accompanied the seeding of the artificial grasses.

Thus do we find ourselves forestalled, in the adoption of the artificial grasses and alternate husbandry; and there is reason to believe that we should rather regret our ignorance of the methods of tillage practised by the ancients, than deplore their ignorance of our improvements. Lucerne is not yet fairly domesticated, and there are individuals yet living who have witnessed the introduction of red clover into our system of rotation of crops. This great ameliorator, I was informed by the late James Vaux, was first imported and sown by him, on a farm in this vicinity,—now partly belonging to John Shearer, Esq.,—previous to the American Revolution. From hence it rapidly spread throughout the State. Some years ago, I tried the experiment of importing white clover seed from Germany, in some parts of which country it is used instead of the red. It added much to the beauty of the pastures, but the excess of it was found too difficult to dry, when making hay. Our country likewise claims to have been the first in which plaster was introduced to stimulate crops. The venerable General Scheetz, now in his 84th year, remembers when he was yet a boy, that a vessel arrived at the wharf in Philadelphia, containing some lumps of plaster among the ballast. A German passenger, having hired with a farmer in Whitemarsh, informed him of its virtues when applied to grass; whereupon a specimen was procured, reduced to powder, and spread, with such benefit, as to insure for the future, a regular and constantly increasing demand.

Farmers have been accused of parsimony; and are perhaps prone to err on the side of extreme caution, not only in reference to novel modes of tillage, but especially do they demur to the adoption of new and untried breeds of animals. This is not surprising, for the farmer has no superfluous cash to throw away on doubtful experiments. His money comes hard, and is held tight. To succeed in his business he must economize; moreover, experiments in farming are unlike those in chemistry or optics, whose results are instantaneous—they are the work of time; and long years may be consumed in doubtful, or disastrous researches. Though every good farmer must possess habits of accurate observation, his attention is nevertheless constantly distracted, by the various duties of the farm. He has seen speculations—that of the Morus Multicaulis, for instance—explode like the South Sea bubble. The introduction of Merino sheep, likewise, was an era of wild and ruinous speculation, which some of you may remember. Both of these experiments will probably result in permanent benefit to the interests of the country; but accompanied as they were, by so much individual suffering, it is too much to require us to repeat the dose very often. We are now invited to introduce the Alpaca from South America, on account of its superior wool. From its history, and an examination of a specimen now in the menagerie in Philadelphia, it would appear to unite the characteristics of the sheep and camel. It has been introduced into Europe, and through the medium of a company formed in Boston, we may ere long add it to our list of domestic animals.

It cannot be expected of individual farmers in this country, to perform a duty, which, if undertaken at all in foreign nations, is the work of government. An intelligent friend who travelled last summer through Spain, informs me that so attentive is that government to this object, that it has recently imported from Africa large herds of elephants and camels, to inhabit an extensive tract of waste land, on the banks of the Guadalquiver. To these have been added, with more doubtful expediency, a species of tiger, comparatively harmless, for the sake of its brilliant skin: so that our amateurs need only visit the vicinity of Seville, to witness, as did my informant, the habits of some of these animals in a state of nature.

Closely connected with our subject, I may mention on the same undoubted authority, that throughout Andalusia there is now a general revival of agriculture. The famous Vegas of Granada and Malaga are once more blooming gardens, as they were in the times of the Moors. The accumulated waters of the hills, are during the day dammed up in reservoirs; and under the superintendence of a public officer, they are distributed through thousands of sluices, to irrigate the fields at night. As a natural

consequence of the revival of agriculture, navigation, commerce and manufactures, are again flourishing. This gentleman himself wore a beautiful cloth manufactured at Barcelona. Spain has long been treated as a colony by England, for the production of wool, which England kindly undertook to manufacture and return to her, increased ten fold in value. The expulsion of Espartero broke this dependence, and if she can succeed in re-annexing Portugal, Gibraltar must follow. Then may the noble race, which produced a Gonsalvo de Cordova, and a Ponce de Leon, after ages of oppression and apathy, again commence a career of prosperity, which was extinguished in the avalanche of gold and silver in the sixteenth century, from the new world.

The most eligible mode, in our country, for the introduction of whatever is beneficial, would be the formation of a company, in some central position, for the establishment of Botanical and Zoological Gardens; which, located in the vicinity of a great city, would soon pay their own expenses. Here animals, as well as plants, might be gradually acclimated, and when proved by experience to be valuable, there would be no difficulty in getting them adopted by farmers. I am happy to be informed, that several liberal minded gentlemen of Philadelphia have had such a plan in contemplation, to be carried into effect in the vicinity of that city.

The formation of extensive libraries, is not the only method of diffusing knowledge among men; and it is a subject of regret, that the Smithsonian Institute, at Washington, connected as it is with Government, could not be made subservient to this vital interest.

But, after all, gentlemen, it becomes us as intelligent men, whose prosperity depends upon our own efforts, to institute an inquiry as to the best method of obtaining the ways and means. We see ourselves beset with difficulties, but we do not labour like those without hope. Our greatest burden is excessive taxation. This is indeed the burden of the farmers' song in all ages; and arises from the fact that land can always be found, while money and jewels can always be concealed. Our legislature, aware of the injustice done to the farmer, has made an effort to tax personals; we all know with what success. The interest of our public debt could readily be paid, if taxation was equalized in proportion to value and protection. But the operation is so much the more severe upon us; inasmuch as our taxes are entailed upon us, to support canals and railroads, whose principal business it is, to transport commodities which come in competition with, and reduce the price of our own productions. If it be true, as the poet says—that

"Partial evil 's universal good,"

we must not complain. We do not dream of repudiation: but we demand of our brethren, for whose benefit we suffer, a just and honest equalization of the burden. So much for the present: and as a guarantee for the future, we propose an amendment to the constitution, requiring that the State shall contract no debt, without a special appropriation for its speedy extinction.

On the other hand, it must be frankly admitted that our advantages do much predominate. We have one of the best markets in the world, which takes at a fair price, every description of our surplus produce. We have a soil which only requires good management to be highly productive. We have the means of procuring manure, which is the very life of the land, in abundance.

The duty on salt, an article so essential to the farmer—which was abolished in England in 1823, and which we have patiently borne for more than half a century—has recently been reduced.

We have plaster at a price which is always reasonable. Above all, we have lime at our doors, cheaper than it can be produced elsewhere. This is an immense advantage, of which we have not failed to profit. The high and increasing value placed upon lime, may be estimated, from a passage in a late work on calcareous manures, by an eloquent French author, M. Puvis.

"The Supreme Being," says he, "appears to have placed lime everywhere, at the disposal of the industry of man: he has left him to labour in its employment and sometimes in its preparation: but this is not an unrequited labour; for the established laws of vegetation almost always recompense him by excellent results."

You are however practical farmers, and each one of you has, I doubt not, his own peculiar views about manuring the soil, ploughing the land, seeding wheat, and planting corn. "Many a time and oft" have you discussed the origin of mildew, smut and cheat. Amidst much diversity of opinion among farmers, you have perhaps never known a miller who would admit the dogma, that wheat could turn to cheat. In this, the millers are supported by the botanists; who assert that like produces like, all the world over. If, however, wheat will not produce cheat, it will be admitted that the seed of cheat like that of some other grasses, must lie dormant for generations;

until ploughing or other change of circumstances, produces vegetation. It would be a poor return for your kindness in inviting me this day to address you, were I to take advantage of my position, which by courtesy admits of no reply, to force upon you my crude ideas on these disputes "never endvoured to invite your attention to efforts made ing, still beginning." I have rather endeain your noble calling in by-gone days.

In taking a short review of our principal crops, it will be necessary to refer to my own opinions and practice. I shall do so with due deference to the more matured experience of others; for of all subjects it least becomes a man to dogmatize on agriculture. So various are the qualities of land, and the proportions of vegetable and mineral ingredients of soils, even in the same vicinity, that opposite results often occur in contiguous positions. Experience is, therefore, the safest teacher, and will remain to be so, even when our country shall be filled with agricultural societies; and farmers shall carry a portion of their soils to the laboratory of the chemist, to ascertain the kind and quality of manure or stimulus required for any given crop.

Indian corn is usually our first crop after it is considered necessary to plough the sod; and consequently commences our system of rotation. According to the able report of the Commissioner of Patents for 1845, whose statistics I shall hereafter quote, the yield of Pennsylvania, that year, was 17,126,000 bushels.

The relaxation of the British corn laws and the failure of the potatoe crop, have made Indian corn an article of immense commercial importance. Though long cultivated in the south of Europe, yet every effort of enlightened and scientific men to introduce it into general use, had failed. Joel Barlow's poem in praise of hasty pudding, or mush, as we call it, and William Cobbett's extraordinary efforts proved alike unavailing, until the anathema of the latter upon the potatoe, seemed realized by the universal blight.

It is probable that some inferior descriptions of corn were indigenous in both Asia and Africa—though on this disputed point much ink has been shed, without settling the question. It is however certain, from the testimony of the early navigators, that Indian corn was in universal use among the native tribes of this continent, from Canada to Patagonia. Botanists have likewise discovered it in a state of nature, especially Humboldt and Bonpland. By the kindness of Peter A. Browne, Esq., of Philadelphia, who has written an interesting essay upon Indian corn, I am enabled to exhibit to you an ear of native corn; each grain of which is covered with a husk or glume. There is evidence that this corn has been found at the base of the Rocky Mountains; and it is certain that it grows wild in South America. Upon being cultivated it loses the husk on the grain, and assumes the appearance of several varieties. To the same gentleman am I indebted for the rare specimen of fossil corn from the neighbourhood of Wheeling.

The large sample of Gourd seed corn is a specimen of the yield of Oregon; this ear having however been produced from seed, introduced from that country last season. After having tried many varieties, as the Baden, Jackson, White, Gourd seed, and Dutton corn, I am convinced the old Pennsylvania eight-rowed yellow—the King Philip corn of New England, is in this latitude safest and most productive. Safest, because its hardy habits and early maturity secure it from frost; and most productive from the extraordinary number of ears to the stalk. I have for many years selected seed from the most fruitful stalks, which sometimes produce four perfect ears. Manured in the hill, its yield is, according to the season, from 60 to 70 bushels shelled corn to the acre; not guessed at, but measured. When to these advantages is added 10 per cent. additional price, which is usually realized upon this variety of flint corn, and the preference given to it by millers who grind corn and cob together, have we not made a strong case! The cob has been estimated to contain more nourishment than bran; and distillation proves it to produce both oil and spirits. I have fed largely in this way for several years by substituting the cob in place of oats, usually chopped with the corn—which is too concentrated and heating, without some admixture. It must be borne in mind that the capacious stomach of the ox or cow requires distension, as well as strong nourishment. For milch cows, we always add one-half of wheat bran to the mess—and to all kinds of feed, a proportion of at least one-eighth of cake meal.

The only author that I know of who has vilified Indian corn, is the famous Charles Dickens, in his "Notes on America;" who declares that our corn bread laid like molten lead upon his stomach: which is the best apology he has yet made for the atrabilarious character of his book.

The oat crop, which usually succeeds that of corn, has important claims upon the good opinion of the farmer—its yield in Pennsyl-

vania in 1845, was estimated at 19,826,000 bushels, being greater than that of any other grain.

Though not used in this country as in North Britain, for the food of man—and in our climate degenerating in weight and value; yet as food for horses on a journey, it is unsurpassed. It does not possess the nutritive properties of corn, but it is exempt from its heating and feverish tendencies. It succeeds well on land rather cold and wet, and perhaps the best oats produced in Pennsylvania, grow upon the table land of the Alleghany mountains. It is indeed from these more inclement and cool regions that we are forced to procure a renewal of our seed. There are several varieties of oats cultivated, called by various local names, as Barley oats, Black oats, and the Tartarian or one-sided oats. This crop has the valuable property by its rapid advance, of overshadowing and discouraging the growth of weeds; and consequently leaves the ground in an admirably clean condition for the wheat and grass crops which follow it.

Wheat, the most important of the cereal grasses, is, and always has been the great object of the farmer. In all countries capable of producing it, the best lands are devoted to its cultivation. So long has it been under the dominion of man, that it is supposed all traces of wheat in its wild, or native state have been lost. Mr. Buckingham, however, in his travels in Mesopotamia, near Orfah, the "Ur of the Chaldees," found the plains covered with a plant, which on comparing it with wheat, he considered to be that grain in its native state.

In very early periods, wheat was a luxury, the use of which was confined to the wealthy. The ancient kings of Persia, who drew from each province of their vast empire, the production for which it was most distinguished, selected Syria as their granary for wheat; and the most beautiful specimen I have ever met with, was brought from the vicinity of Jerusalem. Thirteen grains were sent to me, and every effort was made to propagate seed from them. Several germinated, throwing up stems and developing heads of extraordinary size. But it was struck by mildew, and after the second season ceased to reproduce. The result of this and other experiments of the kind, are the less to be regretted, as there is reason to believe that any variety of wheat will soon adapt itself to the soil and climate in which it may be introduced.

You must have observed what a change has come over the Mediterranean wheat so generally adopted by us a few years ago. It has lost its exemption from the fly and mildew, and it is with difficulty a pure sample can any longer be obtained: it being apparently absorbed into our old red chaff bearded wheat; which was doubtless introduced upon the first settlement of the country, and found to be well adapted to the soil. Pennsylvania, though producing 12,580,000 bushels of wheat in 1845, was surpassed by Ohio and New York; and as Michigan, Wisconsin, and Iowa are entering into the arena, it may be wise in us to look to some other crops, in which we shall not be subjected to such dangerous competition.

Though we all know by sad experience, that a season seldom passes during which this crop is not assailed by some of its legion of enemies, yet perhaps our average produce is nearly as much per acre as in England. The weight of the straw is estimated at about twice that of the grain; and early cutting is found to be both safest for the wheat and best for the straw. We never sow of late years less than two bushels per acre.

Rye, which is sometimes substituted for wheat in the system of rotation, appears to be a particular favourite, as Pennsylvania produced, in 1845, 11,929,000 bushels, or nearly four times the amount of any other State. The quality of the grain is admirable in our more northern and hilly regions, but like oats, degenerates south of the fortieth degree of latitude. Rye straw may be considered the most valuable for the production of manure and the various purposes of the farm.

Buckwheat is extensively cultivated in those parts of our State most distinguished for oats and rye. A large annual exportation of buckwheat meal is made to the seaports, both north and south of Philadelphia. The crop of 1845 produced 3,322,000 bushels.

Barley has almost been banished from the list of our staples, and the Philadelphia brewers are forced to depend chiefly upon New York for a supply. The crop of 1845 was estimated at only 141,000 bushels.

In these statistics we are surprised to find the very large amount of 1,600,000 lbs. of sugar, 535,000 lbs. of tobacco, and 41,370 lbs. of silk cocoons, credited to Pennsylvania.

The potatoe crop has been failing gradually for several years; and in 1845 was estimated at 5,497,000 bushels.

The potatoe had exhibited a gradual deterioration in constitutional stamina, long before it was overtaken by the fatal rot; which is now producing such disastrous effects in the old world. The importance of agriculture in the eyes of statesmen, has never been more strongly developed than now, when kingdoms are convulsed, and empires

may be overthrown, by the failure of a crop of potatoes.

It may perhaps be laid down as a principle, that any plant propagated only from roots or layers for a long period, that is capable of reproduction from the seed, will degenerate and finally fail. And the seed from these emasculated plants, will naturally partake of the weakness of the parent stem. We shall therefore be under the necessity of renewing our seed from the Andes; or some other region where the potatoe can be found in a state of nature. In the mean time, as the blight has not visited us with anything like the destructive effect it has had in other countries, we may, by the choice of light and dry soils, succeed in raising a sufficiency for our domestic consumption; for without the potatoe, the dinner table would be a desert.

Though the laws of vegetation require a certain variation and succession in the cultivation of all crops that are not natural to the soil, yet the skill of man can so modify these laws, as to bend them to his necessities.

There is living in Northampton county, Pennsylvania, on the banks of the Lehigh, a very aged man, whose success in falling upon a system of rotation, by which he could obtain the greatest possible yield of wheat, in a given term of years, has caused it to be generally adopted in that fertile region. It is called Sheimer's system, after the discoverer, Jacob Sheimer, whom I had the curiosity to visit at his most substantial homestead some years ago; and from whom I obtained the following account:

When a young man with a large family of children growing up around him, and dependent on him for support; he plainly perceived that under the rude practice then existing, he would not be able to maintain them. He often thought over his difficulties while following the plough, and at length determined upon his plan; which followed up without faltering, has conducted him in the decline of life to ease and affluence.

When I saw him he had resigned the active duties of his farm to a son, who was following in his footsteps; after having himself practised his system of rotation for 35 years, with a constant improvement in the quality of his land; which indeed had the unmistakable stamp of fertility upon it.

The farm contained one hundred acres, which was divided as nearly as possible into eight fields of twelve and a half acres; each of which was carried through an eight years' rotation.

Commencing with a fallow field, he

1st year. Manured and limed; ploughed three times, in May, June and August; harrowed and seeded one bushel and three pecks per acre of wheat, which was ploughed under.

2nd. Clover seed sown on wheat in the spring, six quarts to the acre, which was pastured after harvest.

3rd. Plastered clover in the spring, one bushel per acre; cut in June, and ploughed under second crop, and seeded again with wheat.

4th. Wheat—same as No. 2.

5th. Pastured early in the season, ploughed under second crop in August, and sowed wheat.

6th. Wheat again, and rye sowed on stubble.

7th. Sowed clover seed in spring on rye.

8th. Ploughed under clover sod and planted corn; and next season recommenced.

It will be observed that there were every year three fields in with wheat, one with rye, one with corn, two with clover, and one fallow. The produce had one season reached as high as 1,400 bushels of wheat, 600 bushels of corn, and 300 bushels of rye.

It is only of late years that science has discovered and applied the animal and vegetable refuse of the manufactories of Philadelphia to the use of the farmer. A commencement has been fairly made; and the glue boilers, skin dressers, colour manufacturers, wool combers, and sugar refiners, now contribute to the fertility of the soil, what but recently was a public nuisance. Poudrette, guano, and bonedust, are also considerably used. All these manures I have seen applied with manifest, but various advantage. My own experience has been in favour of a compost of marsh mud, plaster, lime, and stable manure.

Bonedust has not on our heavy, rich soils, produced anything like the effects described in England; and the consequence is, that bone gatherers are constantly travelling far into the interior, collecting bones, which are ground in Philadelphia and shipped to Liverpool. From this we may infer that the field of Waterloo is exhausted.

He who uses or consumes upon his own land the straw or hay of his fields, selling only a portion of his grain, his fat cattle, and butter, may keep his land in an improving condition; and aided by lime and plaster, need look no further for manures. The process of returning to the soil the culm or straw it has produced, is recuperative and reproductive, and is a wise provision of nature to save land from a tendency to sterility. Whoever sells hay or straw, should replace every ton sold, with an equal weight

of manure. For actual experiment has proved, that each ton consumed or littered in stables, produces much more than its original weight in manure.

After all that has been said about composting, candor obliges me to confess, that long research, enquiry, and some practice, incline me to the opinion, that the most economical method of applying manure, is direct from the stable to the soil. I have thus applied raw manure to corn ground and ploughed it under, and as a top dressing for grass sod at all seasons, except the depth of winter and in mid-summer, with results that were not only satisfactory, but surprising. Shakspeare, from whom even farmers may gather instruction, says: "Do not spread the compost on the weeds to make them ranker," which proves the practice of top-dressing in his time.

If we could conveniently get our manure from the stable spread upon the field where it was wanted, and ploughed under, the field itself would be the great compost heap, or laboratory, saving to the soil an immense amount of gaseous evaporation. This practice has been introduced into England on a large scale; and some of its advocates go so far as to attribute to it a saving of one-half the manure. The experiment is worth trying, because it could not result in any loss; but as the question is important, and our time too limited to go fully into it, I beg leave to refer you to an admirable article on the subject, in vol. 7, p. 585, of the "Quarterly Journal of Agriculture"—which can be obtained in the Philadelphia Library, and perhaps in that of Norristown.

In approaching the conclusion of this long, and I fear tedious discourse, I am also approaching a branch of our subject, upon which it is probable I shall have the misfortune to differ from many, for whose judgment I have great respect.

In advocating the careful preservation of old pastures, and even recommending a large increase of permanent natural grasses, it will be understood that I confine my views to a marketable distance from Philadelphia. This area is, however, constantly extending with the annual increase of that great city; and a consequently augmented consumption of the products of the dairy. The fine taste displayed in favour of ice cream, its recommendation by the physicians in many cases of illness, and above all the submission of the patient in swallowing it, indicate a tremendous increase in its consumption. To supply this demand many milk and butter farms are already appropriated; and the production of butter will necessarily be from a greater distance. When to this is added an acquaintance with the famous clotted cream of Devonshire, which requires only to be tasted to be perhaps more popular than ice cream; you will perceive the necessity of a vast addition to our pasture lands, of fine natural grass, for which this vicinity is so celebrated.

The abundance and sweetness of our pastures, and the peculiar variety of grasses of which they are composed, seem to indicate that nature intended to afford us every aid, in the adoption of a system which has the additional and indispensable merit, of being also the most profitable.

Many farmers may be deterred by the apprehension, that there is not a field upon their plantations that could be made to retain grass. They imagine it would run out. Let them try the experiment, at one-half the labour and expense bestowed upon land devoted to tillage, and in due season they may find their pastures the most profitable and least expensive parts of the estate.

It is difficult to introduce new systems, and when in pursuance of a conviction that this was the true plan, I commenced top-dressing old timothy sod, instead of ploughing it for corn, I was told that our land was not natural to grass, and that top-dressing would never answer. The result has been however so encouraging in producing green grass, that at this time we plough but one field a year, and hope ere long to be able to sustain a cow on every two acres of sod, with pasture in summer and hay in winter.

Isaac W. Roberts, Esq., of Lower Merion, well known as an eminent farmer, has a field in grass, which has not been ploughed for nearly a quarter of a century, and which he considers the most profitable on his place; and there are examples in England, of pastures being preserved for a century.

It must be a source of high gratification to the German population of Pennsylvania, that in the career of experimental and scientific agriculture, their father land is in advance of the other nations of the world. Ignorance and egotism have too long withheld from Germany, the homage due to the highest order of intellect, and a persevering industry unparalleled by any other people; and in addressing an audience, many of whom claim that country for their father land, it may be pardonable to advert to her titles to respect.

In Agriculture: Liebig, Thaer, and Burger.

In Poetry: Goethe, Schiller, and Klopstock.

In History and Antiquities: Niebuhr, Heeren, Hurter, and the brothers Schlegel; and that model of travellers, Baron Hum-

boldt; with a host of authors, whose annual literary labours equal those of France and England combined; all vindicate her title to the respect and gratitude of mankind.

She also from remote periods of antiquity, by her conquests and emigrations, scattered far and wide the seeds of liberty, and it is equally to Germany, that Franks, Goths, Lombards, and the Saxons of England, owe the spirit and substance of free institutions. And though Germany dwells at present in apparent apathy, yet we have reason to believe that the intelligence of that land is silently preparing for a bloodless revolution. The immigrants from no other country slide with more alacrity and ease into their duties as citizens of this republic.

But it is as farmers, that we desire to speak of the German population of Pennsylvania; and surely no man who has travelled and observed, can doubt that in the particular line of farming which seems most congenial to their habits, viz: the production of wheat, they are surpassed by none. It may be remarked that they follow this up by their skill as millers, and persevering to the end, we find them established in our towns and cities, as bakers, to the exclusion of all competition.

Among the many disparaging stories current with a class who measure all by their own puny standard, was one some years ago, which attributed to Pennsylvania a tendency to Agrarianism. An eminent jurist of a neighbouring State, who yet survives to do honour to his country, listened to these charges, and at length decided to become personally acquainted with a people from whom such evils were expected. I met with him on his return from a tour through one of the richest agricultural districts of the State; perfectly relieved from his apprehensions and amused at his own credulity. "Sir," said he, "I fear no political danger from a population with such wives and children; with such barns, houses and lands, and with the habits of persevering industry, peculiar to your German population."

For the attention and kindness with which you have this day honoured me, you will please to accept my hearty thanks. It is however but an additional instance of your readiness to welcome to hospitality and "*freundschaft*," all who with honest views and fair intentions, desire to enlist themselves in the ranks of the Montgomery county farmers.

Our winter has not been a severe one, yet little opportunity has been afforded for the plough to operate.

Vinegar Making.

By Prof. L. D. Gale.

Good vinegar is not universally found amongst the farmers of our country. In the Western States it is rare to meet with a good article, and yet it is as easy and practicable as any other product of the farm. In New England, vinegar is generally made from apples, by throwing aside into an empty cider barrel stationed in the garret, all the drippings of cider, sour beer, &c., and drawing out from time to time for the uses of the table, and for pickling.

In the Western States it is often made of diluted whiskey, mixed with sour beer and other fermenting liquors.

In Texas it is frequently made by sour or green grapes, and the washings of whiskey barrels. This makes an inferior article, being a mixture of acetic acid or true vinegar, and a combination of tartaric acid and potash. Vinegar is an article of great antiquity, it is often mentioned in the Old Testament, and is manufactured both here and in Europe, by two general processes, all others are but modifications of the one or the other of these. The first is the distillation of wood in iron cylinders, and condensing the acetic vapor by cold water: the second consists in the acetic fermentation of saccharine or alcoholic liquids.

In England the vinegar is made either from the distillation of wood, or from the fermentation of malted liquors.

In France it is manufactured from sour wines, and hence the name *vin-aigre*—wine-sour.

In Germany it is made both from sour wines and from whiskey. English vinegar generally contains sulphuric acid. Indeed, this is allowed by government to the amount of two to five per cent. As this prevents the formation of mother, which is a vegetable substance, I presume this object must constitute the basis of the permission. I am somewhat strengthened in this view, from having been applied to by an American, who had shipped vinegar to England, desiring to know how he could prevent the formation of "mother" in vinegar, as much had accumulated in the article sent out, which could not be sold on that account. The remedy in such a case is sulphuric acid two or three per cent.

Many years ago it required months to make good vinegar, but by the aid of science and much practical skill, the Germans have introduced a process by which the work of months is brought within the compass of a few hours. The best of vinegar is now made in from two to four hours.

In a standing cask eight feet high, and four feet in diameter, it is practicable to make thirty to forty gallons in a day of twenty-four hours.

The apparatus used in the quick, or German process, is very simple in its construction, and is easily made.

It may be made of one length of stave, as here represented, or of two whiskey, or molasses hogsheads; or lastly, it may be made of two wine butts: the latter, perhaps, is preferable. The chines of the lower one, and the lower chine of the upper, are to be trimmed off, so that the upper casks may be received into the lower one. But previous to this operation, the upper part of the lower cask, and both heads of the upper one should be removed, and the cask made clean. Now set it in its place, and bore eight small holes, say half an inch in diameter obliquely downwards, for the purpose of supplying air to acidify the vinegar stock. The direction being for the purpose of preventing any vinegar from running out at the holes.

We will suppose the stand set up in its place, the next step is to fill it with beech or other shavings. This wood is the best, but other wood may be substituted, as black birch, ash, white or black oak, white poplar, &c. The last is often used, but soon becomes bad and should be renewed at least once in three years, and besides, the vinegar has a slight bitter taste. Any kind of maple that splits well will do. The shavings should be made in a particular way; they should be the thickness of an eighth of an inch, twelve inches long, and rolled into a coil. They should be an inch or an inch and a half wide.

They are best made by planing with a wide and open-mouthed plane from the edge of a plank cut into twelve or fourteen inch lengths.

The next thing to be done, is to fill up the stand to within eight inches of the top, and there support by means of wooden pins, a hoop on the inside, sufficiently thick to support on it a false head filled with quarter holes; say two inches apart, and with two chimney holes one and a half inch diameter, for the purpose of ventilation. The stand is now ready for working, and is put in operation by procuring sufficient good vinegar to thoroughly wet the shavings, by pouring it on the false head. The attainment of this point is known by the liquor running out freely through the faucet below.

Put a thermometer in one of the chimneys, lay a cover over the top and leave the stand to itself. The temperature of the room should be from seventy to eighty degrees.

In from forty-eight to seventy-two hours the thermometer will begin to rise, and will stand from eighty-five to ninety degrees. When it has reached eighty-six degrees, draw out from the faucet a pailful of the vinegar, and pour up as before, and if there be not enough to run again freely through the shavings, more vinegar must be supplied. For a few of the first feedings it may require more than a pailful. The thermometer in the chimney will now sink several degrees, and must be left quiet until the heat comes up to eighty-six degrees, which at first will require several hours; now draw out and pour up again, and so continue to do, at intervals of an hour, until the liquid and shavings are sufficiently soured; which is ascertained by the taste of the vinegar, but still better by analysis.

When the shavings are once well acidified, they will ordinarily heat up so as to require feeding once in an hour, and may be managed in the following manner:

Pour into a reservoir for stock one measure of proof whiskey, and nine measures of pure soft water, and if you have any old cider, or sour beer, you may add one measure of it to the stock reservoir.

Of this mixture you may pour up two and a half gallons, and when it has run through, and the heat has again come up to eighty-six degrees in the chimneys,—say in about an hour—draw out from the faucet and pour up, and let it run through a second time, when if the stand be in good order, the vinegar is finished; otherwise it must be run through a third time, when the heat has again come up to eighty-six degrees. Suppose the vinegar to be finished with the second run, then stock will be fed when the heat reaches eighty-six degrees.

The strength of vinegar is a matter of much importance to the buyer as well as to the manufacturer—it is the absolute quantity of acid contained in a given measure or weight of it, and is generally ascertained by carbonate of potash, which neutralizes the acid. The vinegar to be tested is poured into a glass measure, and a wide-mouthed two ounce vial filled with dry carbonate of potash, and exactly balanced in a small apothecary's scales, and small portions of it added to the vinegar until litmus paper when immersed becomes violet blue, instead of red. Weigh again the carbonate of potash, and deduct the quantity used—it is the representation of the strength of the vinegar tested.

Good commercial vinegar will neutralize thirty grains of carbonate of potash—very strong vinegar, such as is used in white lead works, will neutralize thirty-six to forty

grains. The former requires ten per cent. proof whiskey, and the latter fifteen or twenty per cent.

When a person makes his own vinegar according to the directions here given, he might, if he chose, substitute for the stock made of whiskey and water,—sour beer, cider slops, the washings of cider barrels, &c., &c., and instead of working the stand hourly, or every two hours, as when it is made a business, the vinegar would be drawn out and poured up every time any new material is added to it; and in this case the air holes, instead of being bored eight inches from the bottom, should be at or above the bulge of the lower cask, so as to allow of room for the vinegar to be kept on hand. In this case, the size of the holes for supplying air should be one-eighth of an inch instead of one-half an inch. It may be remarked, that these directions are sufficient for the purposes of the farmer or any one who desires to make his own vinegar, but they are not critical and minute enough for the manufacturer. Much skill and experience are requisite to compete with those already in the business. For it is a distinct and large business, especially in the neighbourhood of New York, where not less than fifteen or twenty thousand gallons are daily made in and about the city, consuming some fifteen hundred or two thousand gallons of proof whiskey.—*Eureka.*

We have never seen any vinegar manufactured in this *artificial*,—or if our readers would rather,—this *scientific* manner, at all to equal the genuine article made from good substantial cider. This it is true, is not made in one day, nor in a hundred: it requires time. In order to procure a good article, we have latterly been in the habit of obtaining from our grocer, say a couple of gallons of his best cider vinegar, and mixing that with another gallon of wine vinegar. This makes a condiment worthy of any man's cabbage, and we recommend the city lover of good vinegar to try it.—Ed.

How to treat bread when taken from the oven.—Never set it flat on the table, as it sweats the bottom, and acquires a bad taste from the table. Always take it out of the tins, and set it up end way, leaning against something. If it has a thick, hard crust, wrap it in a cloth wrung out of cold water. Keep it in a tin box, in a cool place, where it will not freeze.

We have seen it stated, that ten thousand barrels of onions are annually raised in the adjoining towns of Salem and Danvers, in Massachusetts.

THE FARMERS' CABINET,

AND

AMERICAN HERD-BOOK.

Philadelphia, Second Month, 1847.

The distresses in Ireland and Scotland, on account of short crops, do not by any means appear to abate. We who are here in the midst of plenty, and prosperity, cannot realize the horrors of neighborhoods suffering for lack of food, or of individuals dying with starvation. In her speech from the throne at the meeting of Parliament on the 19th ult, the Queen calls the attention of her legislature with the deepest concern, to the dearth of provisions which prevails in Ireland, and in parts of Scotland. In Ireland especially she says, "the loss of the usual food of the people, has been the cause of severe sufferings, of disease, and of greatly increased mortality among the poorer classes." Louis Philippe, also in his addresses at a late opening of the Chamber, adverts to "the sufferings which this year press upon a portion" of the French population, and asks that every facility may be afforded to his government, to administer the needed relief.

Bread stuffs and provisions, generally, have taken a still further rise in our markets, and large amounts are continually shipped to England. Contributions throughout the country are liberally handed over to be transmitted for the alleviation of the necessities of the destitute and perishing. Wheat flour is worth $6 to $7—wheat, $1,20 to $1,40 per bu.—corn, 80c. to 100c., while pork and beef are from $5,50 to $7, per hundred, according to quality.

We would invite attention to the article on the improvement in carriages—more particularly in so far as the axles are concerned. See p. 212.

A month ago we published Morris Longstreth's answers to certain inquiries made by the State Agricultural Society of South Carolina. In our present number will be found an Address delivered by the same individual on the 11th ult. before the Jeffersonville Agricultural Association. The Society requested a copy for publication, and one was kindly forwarded for insertion in the Cabinet. We copy from the *Norristown Register* On comparing it with the article referred to above, a little repetition may be observed, but we concluded it were a pity to diminish its value as a whole, by any omissions: it is therefore given entire.

Since the publication of our last number we have been advised by the Chairman of the Committee, whose names appear to the *Report on Manure* on page 192, that that Committee do not endorse the sentiments expressed in that Report—that they never saw it before its publication—and that their names were used without their authority or consent. We took it from a pamphlet containing the transactions of the New Castle Agricultural Society.

The quantity of rain which fell in the 1st month, 1847, was ..... 4.73 in.

Penn. Hospital, 2nd mo. 1st.

Through the courtesy of our friend Thomas B. Florence, Secretary of the Board of Controllers of the Public Schools of the city and county of Philadelphia, we have been furnished with detailed accounts of the operations of the Board for the year ending the last of 6th mo., 1846.

We have looked over them with great interest, and could not avoid being favourably impressed with the advantageous working of the extended machinery. The statements in relation to the Central High School are particularly valuable.

The aggregate expenditures of the Public Schools of the county for the year, was $247,418.34. The number of children in the schools at the date of the Report was 37,025, and the number of Teachers 561, of whom 80 were males, and 481 females.

Three months ago on page 131, we gave an excellent receipt for curing hams. Many of our readers know that after they are cured and smoked, it is oftentimes no easy matter to keep them satisfactorily through the warm season. The Editor's plan—and it is the best we have fallen upon in a practice of more than thirty years—is, to envelope the ham completely in two or three newspapers, and put it in a muslin bag. Let there be a string put through the hock, say six or eight inches long, by which it may be hung up—draw the mouth of the bag tight, and tie it round the string. It is better to let the ham, when suspended in the closet or cellar, bear upon its own string, rather than upon that of the bag in which it is enclosed. The bag will be injured, if the ham bears upon the bottom of it.

The 8th No. of Colman's Tour, treating of Crops, Live stock, Dairy Husbandry and Manures, has come to hand, and will be found of equal interest with any of its predecessors. H. Colman is now on the continent, and the succeeding two Nos. will probably treat on the agriculture of the parts he may visit. We would much like to furnish more of our subscribers with this highly valuable work. Price complete in 10 Nos., $5.

☞ SHORT ADVERTISEMENTS,

The subject matter of which, may correspond with the agricultural character of this paper, will be inserted at the rate of one dollar for each insertion of ten lines or less; and so in proportion for each additional line. Payment in advance.

Fruit & Ornamental Trees.

The subscriber offers for sale an extensive assortment of Fruit & Ornamental Trees of the most approved varieties, of fine size and warranted true to their respective names. Orders may be left with J. Tatum, No. 50, N. Fourth street, where catalogues may be obtained or E. P. Middleton, No. 9 Market st.

EZRA STOKES,

Mt. Laurel, near Moorestown, Burlington co., N. J.

Second month 15th, 1847.

SEED STORE,

No. 23 Market Street, Philadelphia.

The subscriber keeps constantly a supply of White and Red Clover, and other grass seeds; fresh Perennial Rye-grass, and Lucerne seed. Field seeds, consisting of choice Spring Wheat, Barley, Potatoe Oats, Northern and other seed-corn. Also, in season, Fruit and Shade Trees. Garden and Bird seeds generally. Guano in parcels to suit purchasers.

M. S. POWELL.

Philad., Feb., 1846. tf.

PRAIRIE FARMER,

Devoted to Western Agriculture, Mechanics, and Education;

Vol. 7, 1847.

Published monthly, at Chicago, Illinois, by

JOHN S. WRIGHT:

Containing 32 very large octavo pages, besides a coloured cover of 16 pages, with advertisements, anecdotes, &c., and liable only to single newspaper postage.

JOHN S. WRIGHT & J. AMBROSE WIGHT, *Ed's.*

TERMS—$1 per annum, six copies for $5, thirteen for $10, payable invariably in advance. All communications must be sent free of postage.

Every intelligent person at the East or South wishes to know, or should wish to know, the condition and progress of the West. Therefore they should take and read the *Prairie Farmer*, which will supply them with more reliable information than they can obtain in any other way, unless they spend hundreds of dollars in travelling.

This is no ephemeral publication, for it has reached its seventh year, and has a circulation of nearly 5000 copies, chiefly at the West, and has at least a respectable standing among kindred publications. The matter is almost wholly original, and a large share is supplied by correspondents, more than 350 in number, from all parts of the West, which makes the paper practical, and western in its character; and being published chiefly for home circulation, there is no attempt to exaggerate or deceive. The information can be relied upon as *truthful.*

The SIX BACK VOLUMES, stitched in covers, subject to newspaper postage, and the 7th, as issued, will be sent for $5; and there are no works published which furnish so large an amount of information concerning the West, or its agriculture.

We really think there is abundance of truth in what our friend J. S. Wright says above of the value of his paper; and certainly every farmer west of the mountains, and many hundreds east of them, after having always of course, first subscribed and paid for the Farmers' Cabinet, can hardly spend a dollar to better purpose, than by securing it at once. It will give us pleasure to receive subscriptions at this office for the *Prairie Farmer.*—Ed.

Valuable Farm at Private Sale.

The subscriber offers for sale the valuable FARM on which he has resided for a number of years past, situated in East Bradford Township, one mile west of the flourishing Borough of West Chester. It comprises about 60 acres of naturally fertile and well improved land, under good fence, and well watered. The buildings are of stone, large, and in good repair. The mansion is pleasantly situated, possesses many conveniencies, and is of modern finish, 44 feet front by 32 feet deep, with an eight feet entry, two rooms on each side, besides kitchen and wash-house, and six rooms in the second story. Pure water is introduced into the house and barn-yard by means of a force pump and water wheel propelled by a never failing stream.

The grounds are planted with fruit, ornamental trees and shrubbery, with a good orchard in full bearing. There are also a three-story barn, 40 feet by 56 feet, a carriage-house, work-shop, ice-house, wood-house, and an excellent and convenient milk-house.

This property is eligibly situated on the main road from West Chester to Lancaster, in an unexceptionable neighbourhood, and offers considerable inducements to one wishing to retire from active business, or to engage in agriculture on a moderate scale.

Apply to the subscriber, residing thereon, or to John Lippincott, No. 65 Marshal street, Philadelphia.

CHARLES LIPPINCOTT,
West Chester, Chester county, Pa.

2t.

Agency for the Purchase & Sale of

IMPROVED BREEDS OF CATTLE & SHEEP.

The subscriber takes this method of informing his friends and the public, that he will attend to the purchase and sale of the improved breeds of cattle, sheep, swine, poultry, &c., for a reasonable commission. All letters post paid, addressed to him at Philadelphia, will be attended to without delay.

AARON CLEMENT.

Sept. 15th, 1846.

FOR SALE,

AT D. O. PROUTY'S

AGRICULTURAL WAREHOUSE,

No. 194½ *Market Street, Philadelphia,*

Corn-Shellers in great variety, price from $1 50 to $50 each; Hovey's Patent Hay, Straw, and Corn-stalk Cutters; Grant's Patent Fan Mills, for chaffing and screening wheat at one operation, warranted to take out cockle, cheat and smut. Also good Fans, for $14 to $18 each.

Whitman's Horse-powers and Threshing Machines, with Straw Carriers and Fan Mills attached; Spain's Improved Barrel Churns, the dashers of which may be taken out to clean. Cheese-presses, &c.; Centre-Draught, Self-sharpening, Right & Left-hand Ploughs, warranted to give satisfaction in their operation.

September 15*th*—tf.

COATES' SEED STORE,

No. 49 *Market Street,*

FRESH TIMOTHY SEED,

Of various qualities, from good common seed to the purest and finest that can be produced,

TOGETHER WITH A COMPLETE ASSORTMENT OF

GRASS & GARDEN SEEDS,

Of the finest Quality and best Varieties,—Bird Seeds, &c.

JOS. P. H. COATES.
Successor to George M. Coates.

Sept. 15th, 1846.

PHILADELPHIA

AGRICULTURAL WAREHOUSE,

No. 291 *Market Street, North side, between Seventh and Eighth Streets, Philadelphia.*

The subscriber has just received from Worcester, Massachusetts, an assortment of Ruggles, Nourse and Mason's improved Eagle, Subsoil and other Ploughs, which have been so much approved by the principal Agricultural Societies in New England the several last years; also Bennett's Cultivators and Stevens' Self-Feeding Hay and Straw Cutter, a late and very valuable improvement in that kind of implement; Grain Cradles, &c.; an assortment of Ruggles, Nourse and Mason's Self-Sharpening Ploughs of the form and model of those above named, are daily expected. T. F. has and will constantly keep a large assortment of Farming Implements, as Fan Mills, Straw and Hay Cutters, Corn Shellers, Grain Cradles, Scythes, &c., together with Garden Tools of all kinds.

THOMAS FURBER.

May 15th, 1846. 1 yr.

NEW

Horticultural and Agricultural Ware-house,

84 *Chesnut Street below Third, South side.*

The subscriber has for the better accommodation of his customers, opened the above ware-house, with a large stock of Garden and Field Seeds, crop of 1845. Implements and Books on Gardening and Farming; he calls the particular attention of farmers to his pure stock of Sweede Turnips, Field Carrots, Beets and Parsnips, Pruning Shears, Saws and Knives.

March 14th, 1846.—1y. R. BUIST.

COAL.

The subscriber has made an arrangement for a constant supply of superior Lehigh and Schuylkill Coal—carefully prepared for family use, which he will furnish *at the usual cash prices*, on application at the office of the Farmers' Cabinet, where samples of the different kinds and sizes may be seen.

JOSIAH TATUM.

Philadelphia, Tenth month 15*th*, 1846.

We keep on hand at this office, and will supply our friends with Agricultural works generally. Among which are

THE FARMER'S ENCYCLOPEDIA, full-bound in leather;—Price	$3 50
YOUATT ON THE HORSE, with J. S. Skinner's very valuable Additions;	2 00
BRIDGEMAN'S GARDENER'S ASSISTANT;	2 00
THE AMERICAN POULTRY BOOK;	37½
THE FARMER'S LAND MEASURER;	37½
DANA'S MUCK MANUAL;	50
Complete sets of the FARMERS' CABINET, half-bound, 10 vols.	8 50
DOWNING'S Landscape Gardening,	3 50
Downing's Fruits and Fruit Trees of America,	1 50
SKINNER'S Every Man his own Farrier,	50
AMERICAN Poulterer's Companion,	1 25
BOUSSINGAULT'S RURAL ECONOMY,	1 50
FARMERS' & EMIGRANTS' HAND-BOOK,	1 00
MORRELL'S AMERICAN SHEPHERD,	1 00
STABLE ECONOMY,	1 00
BEVAN on the HONEY BEE,	31¼
BUISTS' ROSE MANUAL,	75
THOMAS' FRUIT CULTURIST,	50
SKINNER'S CATTLE & SHEEP DOCTOR,	50
AMERICAN FARRIER,	50
THE FARMER'S MINE,	75
HOARE ON THE VINE,	62½
HANNAM'S Economy of Waste Manures,	25
LIEBIG'S AGRICULTURAL CHEMISTRY,	25
" ANIMAL CHEMISTRY,	25
" FAMILIAR LETTERS,	12½

As well as his larger works on Chemistry and Agriculture.

Subscriptions received for Colman's Agricultural Tour—or single numbers sold.

☞ We are prepared to bind books to order.

GUANO.

Twenty-five tons first quality Ichaboe Guano, in bags or barrels, for sale in lots to suit purchasers, by

S. & J. J. ALLEN & CO.,
No. 7 South Wharves, 2nd Oil Store below Market street, Philadelphia.

October 15th, 1845. tf.

Poudrette.

A valuable manure—of the best quality, prepared in Philadelphia, for sale at the office of the Farmers' Cabinet, No. 50, North Fourth Street, or at the manufactory, near the Penitentiary on Coates' street. Present price, for seven barrels or more, $1 75 per barrel, containing four bushels each. Any number of barrels less than seven, $2 each, or thirty-five cents a bushel. Orders from a distance, enclosing the cash, with cost of porterage, will be promptly attended to, by carefully delivering the barrels on board of such conveyance as may be designated. The results on corn and wheat have been generally very satisfactory. Farmers to the south and in the interior, both of this State and of New Jersey, are invited to try it. We are now able to supply the demand for wheat.

JOSIAH TATUM.

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THE FARMERS' CABINET,

IS PUBLISHED MONTHLY BY

JOSIAH TATUM. No. 50 NORTH FOURTH STREET, PHILADELPHIA.

It is issued on the fifteenth of every month, in numbers of 32 octavo pages each. The subjects will be illustrated by engravings, when they can be appropriately introduced.

Terms.—One dollar per annum, or five dollars for seven copies—*payable in advance.*

All subscriptions must commence at the *beginning* of a volume. Having lately struck off a new edition of one or two of the former numbers, which had become exhausted, we are now able to supply, to a limited extent, any of the back volumes. They may be had at one dollar each, in numbers, or one dollar twenty-five cents half-bound and lettered.

For seven dollars paid in advance, a *complete set* of the work will be furnished in numbers, including the 11th volume. The whole can thus readily be forwarded by mail. For twenty-five cents additional, per volume, the work may be obtained neatly *half-bound and lettered.* Copies returned to the office of publication, will also be bound upon the same terms.

By the decision of the Post Master General, the "Cabinet," is subject only to newspaper postage. To any Post office within thirty miles of Philadelphia, they will go free of charge.

Joseph Rakestraw, Printer.